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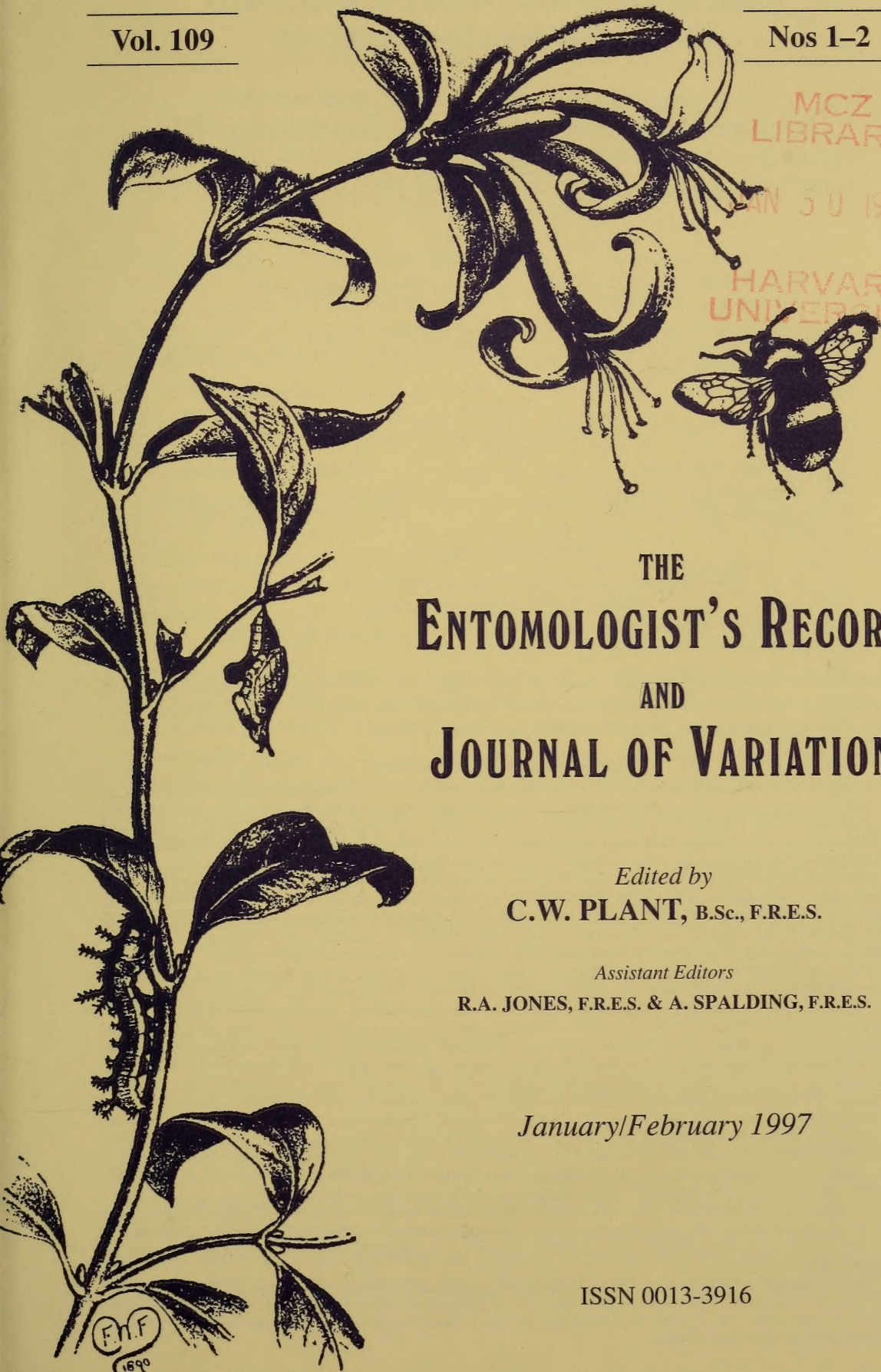
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JOURNAL OF VARIATION

Edited by
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THE ENTOMOLOGIST'S RECORD AND JOURNAL OF VARIATION

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**THE PAUPER PUG *EUPITHECIA EGENARIA* H.-S.
(LEP.: GEOMETRIDAE) DISCOVERED IN LINCOLNSHIRE,
AND OTHER INTERESTING MOTH RECORDS FROM A SURVEY
OF THE BARDNEY LIMWOODS SITE OF SPECIAL SCIENTIFIC
INTEREST IN 1995**

PAUL WARING

1366 Lincoln Road, Werrington, Peterborough PE4 6LS.

UNTIL 1995, the Pauper Pug *Eupithecia egenaria* was only known to occur in the Wye Valley woodlands on the borders of Monmouthshire and Gloucestershire where it was discovered in 1962 (Mere, 1962), the Thetford area of south-west Norfolk/north Suffolk (Haggett, 1981) and recently in Hockering Wood to the north-east of the latter, where the moth was recorded by Rafe Eley (*pers. comm.*) on 2 June 1984 and by G. Haggett, M. Hall and S. Ward (*pers. comm.*) on three separate visits in 1989 (29 May, 9 June and 7 July). In 1993 four adults were captured in King's Forest, Suffolk, in the 10km square to the south of the Thetford Forest complex, on 23 and 24 May, and on 15 June 1993 larvae were beaten from limes *Tilia* sp. in the same area, followed by more adults on 1 June 1994 and 27 May 1995 (C. Smith, *pers. comm.*). There is also a record of a single adult captured at a garden light trap at Walberton, West Sussex on 1 June 1987 (by J. Radford, det. A. Riley). There is a post-1980 record from SN8780 which requires confirmation. A pre-1879 record from Loughton, Essex (Carrington, 1879) is now considered not to refer to this species (Plant, 1993) but to have arisen due to the early confusion over nomenclature described by Wakely (1957). It is therefore of interest to report that during an English Nature (EN) research project on the moths of the Bardney Limewoods in Lincolnshire from June to September 1995 (Waring, 1996), the Pauper Pug was found in three of the four woods studied. The identities of these fairly distinctive moths were confirmed by dissection of the genitalia by Barry Dickerson. The genitalia are diagnostic and quite unlike any other British *Eupithecia* species, due to a pronounced spine mid-way along the ventral edge of the valves or claspers of the male (shown in Agassiz *et al.*, 1981). Fig. 1 summarises the known national distribution of this moth to date.

The larvae of the Pauper Pug feed on the flowers of the Small-leaved Lime *Tilia cordata* and, in Norfolk, breeding also occurs on Large-leaved Lime *T. platyphyllos* and the hybrid *T. x europea* (Haggett, 1981). The Bardney Limewoods are one of the major concentrations of Small-leaved Lime-dominated woodlands in England and the largest concentration of ancient woodlands in Lincolnshire so the occurrence of this moth was not unexpected. Indeed, it had been something of a puzzle that the moth had not already been recorded from this stronghold of Small-leaved Lime, which was formerly a much more widespread species in the native woodlands of

Britain. The puzzle was all the more so because some of these woods were surveyed extensively for moths by the late Rick Pilcher in the 1960s and early 1970s.

The Pauper Pug was first recognised as British from the Wye Valley woodlands, in 1962 (Mere, 1962; 1963). The first Norfolk specimen was actually captured in 1953 but not identified for nearly twenty years (Agassiz *et al.*, 1981). Whether the species is a previously overlooked relic survivor of the ancient wildwood or a recent arrival has been debated by Emmet (1981) and Haggett (1981). The fact that the moth is present in the Bardney Limewoods might be seen as strengthening the case for the former view. The occurrence of the moth on more recently planted limes at Thetford, as described by Haggett (1981), is not a problem for this view, bearing in mind the reserves of Small-leaved lime in Hockering Wood and other ancient woods in Norfolk, from which the moths may have colonised more recent plantations. Interestingly, Wakely (1957) predicted that the moth might be found in the west of Britain where he knew the foodplants to be indigenous and Mere (1962) proved him right.

The discovery of the Pauper Pug in Lincolnshire was just one of the results which confirmed the national and local importance of the Bardney Limewoods for invertebrate conservation. Single specimens were caught (and retained) in Stainfield Wood and Ivy Wood and two specimens were collected in Great West Wood, all by the author and all on the night of 25/26 June 1995. Other nationally scarce moths recorded during the study in 1995 included the Mere Wainscot *Photedes fluxa* Hb. and the micro-moths *Oecophora bractella* L., *Epinotia demarniana* F.v.R. and *Spatalistis bifasciana* Hb. Three of the micro-moth species recorded are first records for the vice-county (VC54), these being *Batia unitella* Hb., *Pammene fasciana* L. and *S. bifasciana* (A.M. Emmet, *pers. comm.*).

The study involved simultaneous sampling of four sites, each in a different wood, using standard Robinson patterned mercury-vapour light traps (fitted with 125W MB/U bulbs), which were operated throughout the night from before dusk till after dawn on the nights of 25/26 June, 8/9 July, 21/22 July and 1/2 September 1995. Trap-sites in rides were chosen at Stainfield Wood (S) (TF 118721) and Hatton Wood (H) (TF 162748) to include sampling of the fauna present in rides, whereas at Ivy Wood (I) (TF 145737) and Great West Wood (G) (TF 107763) trap-sites were on minor tracks some 30 metres into the woodland stands, where the trees met overhead and where there were only small gaps open to the night sky. The trapping programme was supplemented by some baiting for adults, using wine-ropes, and by beating and searching for larvae. Waring (1995) describes and illustrates the technique of wine-roping. Full details of the results at the Bardney Limewoods are given in Waring (1996), including photographs and descriptions of the trap-sites and details of the numbers of individuals of each species per trap per night.

Tables 1 and 2 summarise the results of greatest interest. Table 1 shows the occurrence at the traps of the Red Data Book and Nationally Scarce moths (as recognised in Waring, 1994 and, for the micros, Ball, 1986). Table 2 shows the occurrence of species which are considered Local on a national basis (following Waring, 1994) or which are more widespread but of interest in the context of Lincolnshire.

Table 1:

Red Data Book & Nationally Scarce species recorded during the fieldwork in 1995.

| Species | National Status | Sites | | | |
|--|-----------------|-------------------------|-----------|-----------|-------------------------|
| | | S | I | H | G |
| Pauper Pug <i>Eupithecia egenaria</i> | RDB3 | 1 (25.vi) | 1 (25.vi) | — | 2 (25.vi) |
| <i>Oecophora bractella</i> | pRDB3 | — | 1 (8.vii) | 1 (8.vii) | 1 (8.vii) 1 (21.vii) |
| Mere Wainscot <i>Photedes fluxa</i> | Notable B | 5 (8.vii) 1 (21.vii) | — | — | — |
| <i>Epinotia demarniana</i> | Notable B | — | 1 (25.vi) | — | — |
| <i>Spatalistis bifasciana</i> | Notable B | — | — | — | 1 (8.vii) |

Note that a “—” in the Tables only means that the species was not found in the relevant trap session(s). The species may well be present at the site, but missed detection on that particular sampling occasion. The counts in the Tables show the number of individuals on each date. Counts in square brackets refer to individuals seen at additional lights or bait where the species was not recorded in the main trap.

Notable B is a subdivision of the Nationally Scarce category and for macro-moths is applied to species recorded from 31-100 10km squares in Great Britain since 1980. For the less well recorded micro-moths this grade is applied to species known from between eight and 20 vice-counties. Local macro-moths are defined in Waring (1994) as species which are localised in Britain, having been recorded from between 101 and 300 10km squares since 1980, or 1960 where more recent national distribution maps are not available. Note that the Local category covers both species which are patchily distributed throughout Britain and species which are confined to particular areas but may be generally distributed within these. Species known from more than 300 of the 10km squares in Britain are considered Common in terms of distribution. Some of the Common species are often also numerically abundant but others might be seen only in small numbers at individual localities. This grade does not mean that the species occurs everywhere or is found in all habitats.

Note that the Broad-bordered Bee Hawkmoth *Hemaris fuciformis* L. (Notable B) was seen by day on 25 June 1995 by Chambers Plantation, *en route* to Ivy Wood by Keith Shaw and the live specimen passed to me for confirmation. Several others had visited flowers in Keith's garden on the edge of this wood during the month.

The distinctive black and yellow *Oecophora bractella* L. had not been recorded in Lincolnshire before 1995 (A.M. Emmet & R. Johnson, *pers. comm.*). During the study single specimens were collected on 8/9 July at Ivy Wood (Waring), Hatton Wood (Lorand), and Great West Wood (Chainey and Spence) and the moth was still about on the session on 21/22 July when Rex Johnson took one in Great West Wood. The larva feeds on debris under the bark of various trees and in rotten stumps (Emmet, 1988).

A number of the species recorded during the project are of considerable interest at the county level, some of which are not particularly localised on a national basis. Some comments on the status of these in Lincolnshire are given below. These comments are based upon information given by Duddington and Johnson (1983), updated according to more recent largely unpublished information from Rex Johnson, the county moth recorder. There are now over 30 moth recorders in Lincolnshire contributing records to Rex (*pers. comm.*) and a more detailed impression of the moth fauna of the county is developing year by year.

Orange moth *Angerona prunaria* L: We found this large attractive moth in considerable numbers at Stainfield Wood, on both the trapping sessions in July (about 50 individuals were seen in and around two lights on 8 July 1995) but in none of the other three woods. Furthermore, it is such a readily detectable species that it is unlikely to have been overlooked in these and is most probably absent. Stainfield Wood is one of only two sites currently known in the county, the other being Callans Lane Wood near Boston. There are old records for a number of other woods in Lincolnshire and these are listed in Duddington and Johnson (1983).

Pinion-streaked Snout *Schrankia costaestrigalis* Steph.: Hardy recorded inland in the county, but likely to be overlooked, owing to its micro-moth-like appearance. Well established at Donna Nook on the east coast (Dick Lorand). Singletons were recorded at Ivy Wood on the night of 8/9 July (PW) and Hatton Wood on 21/22 July (D. Lorand).

Mere Wainscot *Photodes fluxa*: Recorded from two or three sites in 1995, bringing the total current in Lincolnshire to about half a dozen. Associated with woodland rides in mid-Lincs. Five were recorded at Stainfield Wood on 8/9 July and one more there on 21/22 July (J. Janes).

Table 2:

Macro-moths recorded during the project which are local on a national basis or are more widespread but of interest in Lincolnshire.

* = confirmed by genitalia dissection by Barry Dickerson.

** = a singleton presumed vagrant because no appropriate habitat or foodplant in this locality. Resident on heathland in the north of the county.

*** = confirmed by genitalia dissection by John Chainey.

| Species | National Status | Sites | | | |
|--|-----------------|----------------------------|------------------------------------|------------------------|-----------------------|
| | | S | I | H | G |
| Poplar Lutestring <i>Tethea or</i> | Local | 1 (8.vii) | – | – | – |
| Blotched Emerald <i>Comibaena bajularia</i> | Local | To sheet (8.vii) | – | 1 (25.vi) 3 (8.vii) | – |
| Small Emerald <i>Hemistola chrysoprasaria</i> | Local | – | – | 1 (8.vii) | – |
| Birch Mocha <i>Cyclophora albipunctata</i> | Local | – | 1 (8.vii) | – | 1 (25.vi) |
| Maiden's Blush <i>Cyclophora punctaria</i> | Local | 2 (25.vi) | 2 (25.vi) 1 (8.vii) 1 (1.ix) | 2 (25.vi) 1 (1.ix) | 1 (8.vii) 1 (1.ix) |
| Satin Wave <i>Idaea subsericeata</i> | Common | – | – | 1 (25.vi) | [1] (25.vi) |
| Large Twin-spot Carpet <i>Xanthorhoe quadrifasciata</i> | Local | To sheet [2] (8.vii) | – | – | 2 (21.vii) |
| Wood Carpet* <i>Epirrhoe rivata</i> | Local | – | 1 (1.ix) | 1 (25.vi) | – |
| Beautiful Carpet <i>Mesoleuca albicillata</i> | Common | 10 (8.vii) | 1 (25.vi) | 1 (8.vii) | 1 (8.vii) |
| Scallop Shell <i>Rheumaptera undulata</i> | Local | 5 (8.vii) | – | 1 (8.vii) | – |
| Brown Scallop <i>Philereme vetulata</i> | Local | – | – | 1 (25.vi) | – |
| Dark Umber <i>Philereme transversata</i> | Local | [1] to sheet (8.vii) | – | – | – |
| Currant Pug* <i>Eupithecia assimilata</i> | Common | – | – | – | 1 (21.vii) |
| Clouded Magpie <i>Abraxas sylvata</i> | Local | [1] to sheet (8.vii) | – | – | – |
| V Moth <i>Semiothisa wauaria</i> | Local | – | – | – | [1] (8.vii) |
| Scorched Wing <i>Plagodis dolabraria</i> | Local | 4 (25.vi) | 2 (25.vi) | 1 (25.vi) | 1 (25.vi) |

| Species | National Status | Sites | | | |
|--|-----------------|---------------------------------------|-------------------------|-----------------|---------------------------|
| | | S | I | H | G |
| Lilac Beauty <i>Apeira syringaria</i> | Local | 1 (25.vi) 3 (8.vii) 1 (21.vii) | 5 (8.vii) | 2 (8.vii) | 1 (8.vii) |
| Orange Moth <i>Angerona prunaria</i> | Local | c50 (8.vii) 10 (21.vii) | — | — | — |
| Lime Hawk-moth <i>Mimas tiliae</i> | Common | 1 (8.vii) | — | — | — |
| Marbled Brown <i>Drymonia dodonaea</i> | Common | 1 (8.vii) | 1 (8.vii) | 3 (25.vi) | — |
| White Satin <i>Leucoma salicis</i> | Local | [1] to sheet (8.vii) 1 (21.vii) | — | — | — |
| Rosy Footman <i>Miltochrista miniata</i> | Local | 5 (8.vii) 1 (21.vii) | 1 (8.vii) | — | 13 (8.vii) 17 (21.vii) |
| Four-dotted Footman <i>Cybosia mesomella</i> | Local | — | 4 (8.vii) 2 (21.vii) | 1 (8.vii) | — |
| Scarce Footman <i>Eilema complana</i> | Local | 1 (21.vii) | — | — | — |
| Buff Footman <i>Eilema deplana</i> | Local | [1] to sheet (8.vii) | — | [1] (21.vii) | 2 (21.vii) |
| Least Black Arches <i>Nola confusalis</i> | Local | — | 1 (25.vi) | — | — |
| Purple Clay <i>Diarsia brunnea</i> | Common | [1] to sheet (8.vii) | 1 (25.vi) | — | 3 (8.vii) |
| Dotted Clay <i>Xestia baja</i> | Common | 3 (21.vii) | 1 (21.vii) | [1] (21.7) | — |
| Heath Rustic** <i>Xestia agathina</i> | Local | 1 (1.ix) | — | — | — |
| Gothic <i>Naenia typica</i> | Local | 1 (21.vii) | — | — | 1 (8.vii) |
| Green Arches <i>Anaplectoides prasina</i> | Common | 10 (25.vi) 2 (8.vii) | 1 (8.vii) | — | [1] (8.vii) |
| Orange Sallow <i>Xanthia citrigo</i> | Common | 2 (1.ix) | — | 1 (1.ix) | — |
| Sycamore <i>Acronicta aceris</i> | Local | 1 (21.vii) | — | — | — |
| Svensson's Copper Underwing <i>Amphipyra berbera</i> | Local | — | — | — | 2 (1.ix) |
| Small Clouded Brindile <i>Apamea unanimitis</i> | Common | 1 (25.vi) | — | 2 (25.vi) | 1 (8.vii) |
| Slender Brindile <i>Apamea scolopacina</i> | Local | 1 (21.vii) | — | [1] (21.vii) | — |

| Species | National Status | Sites | | | |
|---|-----------------|-------------------------|-----------|------------|-------------|
| | | S | I | H | G |
| Rufous Minor*** <i>Oligia versicolor</i> | Local | – | – | – | [1] (8.vii) |
| Scarce Silver-lines <i>Bena prasinana</i> | Local | [1] to sheet (8.vii) | – | – | – |
| Beautiful Hook-tip <i>Laspeyria flexula</i> | Local | 3 (8.vii) | 2 (8.vii) | – | 3 (8.vii) |
| Pinion-streaked Snout <i>Schrankia costaestrigalis</i> | Local | – | 1 (8.vii) | 1 (21.vii) | – |

Wood Carpet *Epirrhoe rivata* Hb.: Only two Lincolnshire sites are given in Duddington and Johnson (1983), both pre-1970, but it is acknowledged that the species is easily confused with the much more widespread Common Carpet *E. alternata* Müll. The Bardney specimens were confirmed by genitalia dissection (B. Dickerson). One was recorded in Hatton Wood on 25/26 June (PW) and one in Ivy Wood on 1/2 September (PW).

Beautiful Carpet *Mesoleuca albicillata* Hb.: Until 1995, recorded from few sites in Lincolnshire but recorded widely in 1995 and seems to have had a good year. Probably persists at low density in other years but examination of the new records may reveal evidence of dispersal. One was recorded in Ivy Wood on 25/26 June (PW) followed by ten in Stainfield Wood (Janes) and singletons on Hatton Wood (Lorand) and Great West Wood (J. Chainey), all on 8/9 July.

Currant Pug *Eupithecia assimolata* Doubl.: A singleton came to light in Great West Wood on 21/22 July (R. Johnson) and was confirmed by genitalia dissection (B. Dickerson). There are few confirmed records for Lincolnshire. The species is likely to be under-recorded because it is difficult to distinguish from several other *Eupithecia* species without dissection.

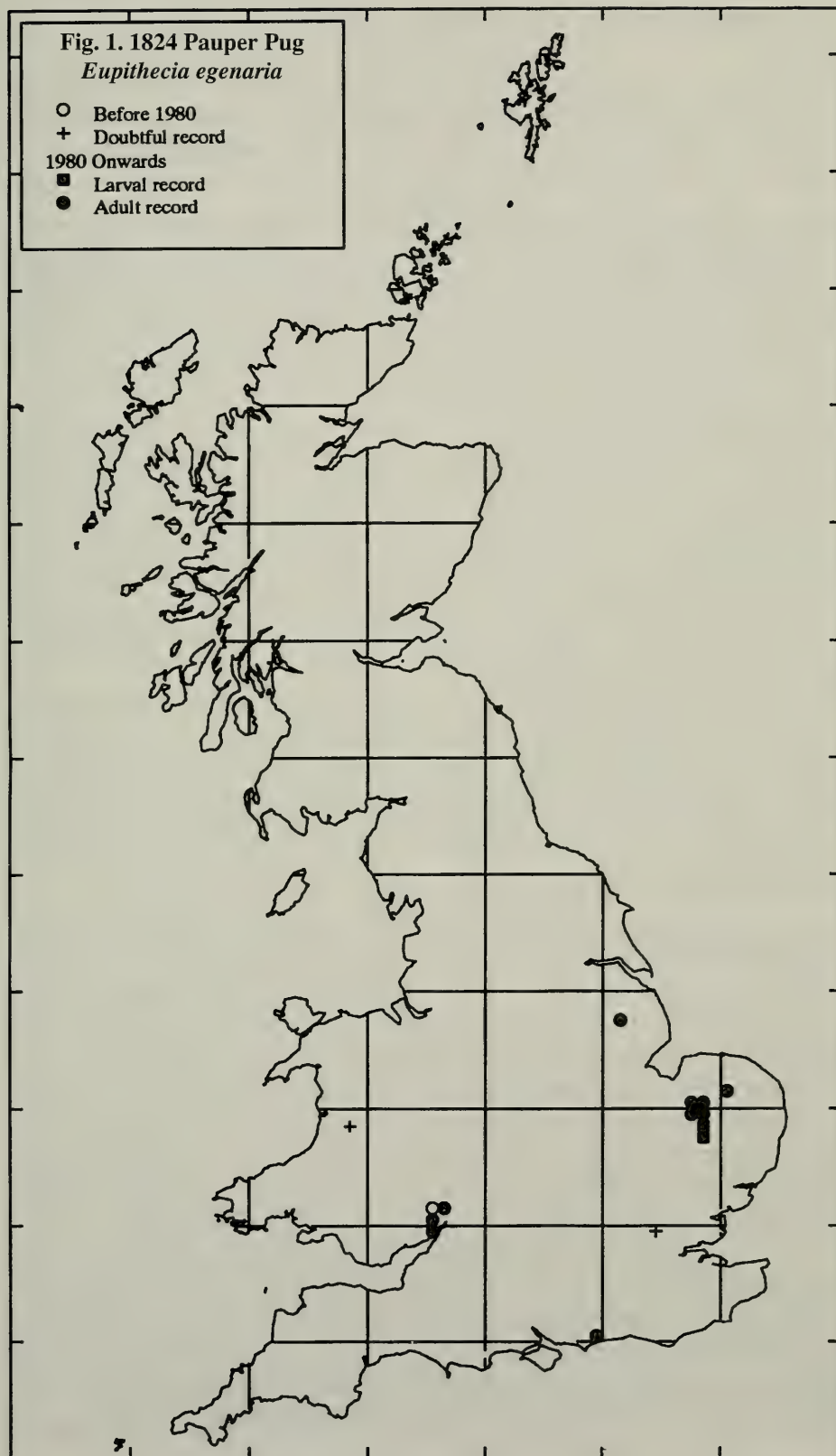
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genitalia dissections which confirmed the Pauper Pug and other species as noted; and Rex Johnson again, for valuable discussion on the status of certain species in Lincolnshire. Copies of the full report, which comprises light trap catches in sites with different woodland management regimes, have been lodged at the offices of English Nature at Grantham and the Forest Enterprise Sherwood and North Lincolnshire District office, and with Rex Johnson, County Moth Recorder, and the above-named trap operators.

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***Tetrastichus legionarius* Giraud (Hym.: Chalcidoidea: Eulophidae) new to Britain**

A total of six ♂♂ and 26 ♀♀ examples of the chalcid parasite *Tetrastichus legionarius* was reared by me from a single gall of *Lipara lucens* (Diptera: Chloropidae) on a reed *Phragmites australis* stem collected at the Essex Wildlife Trust's Rushey Mead Nature Reserve in the Stort Valley, North Essex, on 12 June 1996 (O.S. grid reference TL 4919).

The species is known as a gregarious endoparasitoid of the larvae and pupae of *Lipara* species in the Netherlands, France, Spain, Austria, Hungary, Italy and the Czech Republic (Graham, 1991. *Memoirs of the American Entomological Institute* 49), but is apparently unrecorded from Britain prior to this record. The specimens are preserved in the Royal Museum of Scotland, Edinburgh.

The Stort Valley is well-blessed with small stands of reed, and though it is not continuous there is a presence of the plant throughout this valley which separates Essex from Hertfordshire. At its termination, the Stort flows into the larger River Lea and in the valley of that river are larger stands of reed in several places. It is thus evident that the chalcid parasite is likely to be present throughout, and perhaps elsewhere, also; like so many other "difficult" species, its apparent absence may well be more a function of under-recording than genuine rarity.

I am most grateful to Dick Askew for the identification of these difficult insects and for casting an eye over this note prior to publication; without his assistance the species would likely have still remained unrecorded from Britain. I also thank the Essex Wildlife Trust for permission to record insects at the Rushey Mead Nature Reserve.— COLIN W. PLANT, 14 West Road, Bishops Cleeve, Herefordshire CM23 2QP.

***Aderus populneus* (Panz.) (Col.: Aderidae) at light in south-east London**

I think it worth noting that a single example of this insect flew to mercury-vapour light here on the night of 20 July 1996, even though the species is somewhat widespread with us and the above habit already documented. *A. populneus* is however in general far from common, especially in more recent times, and, while several records exist for the metropolitan area, they are – I believe without exception – matters of ancient history. For this district one may cite Lee and Lewisham (Fowler, 1891, *Coleoptera of the British Isles* 5: 91). I had only twice before met with this beetle, again singly: Windsor Great Park, swept from oak, 6.viii.1953; and Dartford Reach, W. Kent, swept under an elm, 11.v.1965. On the extraordinary habitat-diversity of *A. populneus*, and certain mysterious aspects of biology, see Allen, 1981, *Ent. Rec.* 93: 208-9; and for instance of its exceptional occurrence in large numbers in special conditions, see Whitehead, 1996, *Ent. mon. Mag.* 132: 194.— A.A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

INTERSPECIFIC HYBRIDISATION IN LADYBIRDS (COL.: COCCINELLIDAE)

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Introduction

THE MOST COMMONLY used definition of a biological species is based upon effective reproduction. Members of a sexually reproducing species do, or potentially could, inter-breed amongst themselves, but not with members of other species (Mayr, 1963). This definition implies not only that matings occur, but that viable and fertile offspring are produced. Matings between individuals of putatively different species have long interested biologists for their potential in helping to unravel the evolutionary mechanisms of speciation, the nature of barriers to mating and so gene-flow between populations, and their possible role in the origin of new species.

Matings between members of different species are a waste of reproductive resources for both partners. The waste for females is generally greater than for males, because females produce large, heavily resourced gametes, while males produce small gametes containing little more than a nucleus and a "tail". However, the cost to males is not negligible. Not only does a male that mates with a female of another species waste gametes, he wastes energy in mating, he wastes time that might be used in more productive ways such as feeding, resting or courting more appropriate females, and, as he is less mobile while copulating, he may be more prone to predation. He also runs the risk of contracting disease from his mating partner. Of course females are liable to these latter costs as well.

Ladybirds that mate with non-conspecific partners suffer all these costs. Mating in *Adalia bipunctata*, a highly promiscuous species, generally lasts for several hours. Both sexes expend considerable energy while mating. The female almost invariably shows rejection behaviour when mounted by a male, stretching up with her back legs, kicking back at the male's genitalia and running while swaying her abdomen from side to side. This rejection behaviour may last for many minutes before the female accepts the male. The male has to cling on while the female is trying to dislodge him. Thereafter, he is energetic throughout the copulation, twisting in a corkscrew motion during the first phase of mating, and rocking rapidly from side to side at regular intervals later (Ransford & Majerus in prep.). Mating ladybirds are less mobile than those that are not mating, and, in *Coccinella 7-punctata* at least, are consequently more prone to parasitisation by the braconid wasp *Dinocampus coccinellae* (Majerus, unpublished data). Several species of coccinellid (*A. bipunctata*, *A. 10-punctata*, *C. 11-punctata*, *Hippodamia convergens*, *Tytthaspis 16-punctata*, and two African species, *Exochomus fulvimanus* and *E. concaius*) are also known to bear a

mite, *Coccipolipus hippodamiae*. This mite is transmitted from one ladybird to another during mating and has a detrimental effect on host fecundity and fertility (McDaniel & Morrill, 1969; Husband, 1984; Majerus, 1994; Hurst *et al.*, 1995; Webberley *et al.*, in prep.).

Given these potential costs to mating with a member of another species, selection should promote mechanisms of species recognition in animals. That this is the case is supported by the existence of a huge array of such mechanisms and by the fact that interspecific matings are very rare in animals. However, they do occur occasionally. This paper contains details of a number of interspecific matings involving ladybirds, and discusses the reasons for the occurrence of this apparently inept behaviour.

Observations of hybrid matings

The records of interspecific matings contained herein comprise three categories defined by the situation of the mating ladybirds. Some observations are of ladybirds mating in the field. Others are of matings between individuals that had recently been collected and had been placed together in the same container. The third category involves ladybirds that were maintained in the laboratory, under specific conditions, for some period before being placed together specifically to determine whether they would copulate.

Field observations

Details of 18 field observations of interspecific matings are given in Table 1. Most of the pairs concerned were collected. These were kept in captivity to determine the outcome of the copulation. The ladybirds were kept individually in Petri-dishes, and fed daily on pea aphids *Acyrtosiphon pisum*, black bean aphids *Aphis fabae* or oyster scale *Pseudochermes fraxini* depending on the food preference of the female involved. The dishes containing females were examined for eggs daily. If eggs had been laid, the female was removed to a clean dish. Eggs were counted and monitored for signs of embryonic development. Small pea aphids were added to any dishes containing eggs that showed signs of development. If the eggs hatched, larvae were reared on pea aphids, using techniques previously described (Majerus *et al.*, 1989). The external morphology of fourth instar larvae and pupae was examined to compare with that of the parental species. Any progeny that reached adulthood were examined in detail. The sex, pronotal and elytral colour patterns and other external morphological features were noted while these ladybirds were alive. Attempts were then made to back-cross them to an opposite sex individual of the parental species that they most resembled. In the case of progeny that resembled *C. 7-punctata*, adults were overwintered before back-crossing, as most British individuals of this species require a dormant period before becoming reproductively mature. Eggs from any successful matings were collected and their hatch rates

recorded as an indication of fertility level. Once the ladybirds had died, their genitalia were examined to check sex and look for abnormalities that might be indicative of an interspecific hybrid origin.

Brief details of the outcomes of these treatments for each of the pairs collected are given in Table 1.

Table 1. Records of hybrid matings observed in the field.

+ Indicates that copulation was already in progress when the pair was first seen.

* Suspected that the progeny were the result of the female having previously mated with a male of her own species.

| Location | Date | Male | Female | Mins. mating | No. of eggs laid | Egg fate |
|------------------------|------------|------------------------|------------------------|--------------|------------------|--------------------------------|
| Cambridge | May 1984 | <i>A. bipunctata</i> | <i>A. 10-punctata</i> | 43+ | 14 | Infertile |
| Abingdon, Oxon | July 1984 | <i>A. bipunctata</i> | <i>A. 10-punctata</i> | 26+ | >100 | <i>A. 10-punctata</i> progeny* |
| Exeter, Devon | May 1985 | <i>A. bipunctata</i> | <i>A. 10-punctata</i> | all day | ? | (Brakefield, pers. comm.) |
| Bedford, Beds. | July 1986 | <i>A. bipunctata</i> | <i>A. 10-punctata</i> | 30+ | ? | (Hardimann, pers. comm.) |
| Totnes, Devon | July 1987 | <i>A. bipunctata</i> | <i>A. 10-punctata</i> | 126+ | >100 | <i>A. 10-punctata</i> progeny* |
| Totnes, Devon | July 1987 | <i>A. bipunctata</i> | <i>A. 10-punctata</i> | 83 | 58 | Infertile |
| Calais, France | Sept. 1989 | <i>A. bipunctata</i> | <i>A. 10-punctata</i> | 24 | None | |
| Keele, Staffs. | June 1991 | <i>A. bipunctata</i> | <i>A. 10-punctata</i> | 154+ | >200 | <i>A. 10-punctata</i> progeny* |
| Cardiff | June 1985 | <i>A. 10-punctata</i> | <i>A. bipunctata</i> | 8+ | 5 | Infertile |
| Cambridge | June 1990 | <i>A. 10-punctata</i> | <i>A. bipunctata</i> | 49+ | >200 | <i>A. bipunctata</i> progeny* |
| Hyde Park, London | May 1994 | <i>A. 10-punctata</i> | <i>A. bipunctata</i> | 38+ | 196 | 5 hybrid progeny |
| Calais, France | Sept. 1989 | <i>C. 7-punctata</i> | <i>C. 11-punctata</i> | 64+ | None | |
| Cambridge | June 1993 | <i>C. 11-punctata</i> | <i>C. 7-punctata</i> | 120+ | 287 | <i>C. 7-punctata</i> progeny* |
| Lincoln | July 1994 | <i>C. 11-punctata</i> | <i>C. 7-punctata</i> | 47 | 284 | <i>C. 7-punctata</i> progeny* |
| Clervaux, Luxembourg | July 1995 | <i>C. 5-punctata</i> | <i>C. 7-punctata</i> | 58+ | 127 | <i>C. 7-punctata</i> progeny* |
| Lakenheath, Suffolk | Apr. 1991 | <i>E. 4-pustulatus</i> | <i>C. 7-punctata</i> | 17 | None | |
| Chobham Common, Surrey | May 1991 | <i>E. 4-pustulatus</i> | <i>C. bipustulatus</i> | 102 | 14 | Developed but did not hatch |
| Lakenheath, Suffolk | May 1995 | <i>C. bipustulatus</i> | <i>E. 4-pustulatus</i> | 36+ | 71 | Developed but did not hatch |

Observations of recently-collected ladybirds

Observations of interspecific matings between recently-collected individuals involve ladybirds that were either put into the same container in the field, or ladybirds that were sent in to the Cambridge Ladybird Survey and were placed in the same container, when they were unpacked, before sorting. In all cases, the matings involved took place less than 72 hours after the ladybirds were collected from the wild. The ladybirds involved were treated in the same way as those collected having been observed mating in the wild. Details of these pairings appear in Table 2.

Table 2. Records of hybrid matings between recently collected coccinellids

1. A female *C. 5-punctata* and a male *C. 11-punctata* sent in the same box from the Spey Valley, Scotland, in June 1987 by Patricia Duncan, mated soon after arrival. They subsequently remated on three occasions. The female *C. 5-punctata* produced eggs, however, all the progeny were normal *C. 5-punctata*, the ensuing stock being maintained for two more generations without producing any abnormal descendants.
2. Male *E. 4-pustulatus* repeatedly attempted to mate with both a *C. renipustulatus* (sex not determined) and a male *A. bipunctata*. Mating attempts were apparently unsuccessful (Davies, *pers. comm.*).
3. Male *C. bipustulatus* and female *E. 4-pustulatus* collected Lakenheath, May 1987, mated within a few minutes of collection and stayed in *copula* for over two hours. No eggs resulted.
4. Male *C. 7-punctata* placed in container with a number of *C. 11-punctata* collected earlier the same day, attempted to mate with several of them, and then apparently succeeded in copulating with one, remaining in *copula* for approximately 45 minutes. Some 73 eggs were produced, but all progeny were normal *C. 11-punctata*.
5. A female *A. bipunctata* and a male *A. 10-punctata* collected from overwintering sites in Cambridge, 11 December 1991, mated the following day while still in collecting box. The pair copulated for 75+ minutes. No eggs resulted for 11 days. Thereafter, a few infertile eggs were laid.
6. Male *A. oblitterata* mated with a female *C. 7-punctata* in the laboratory, for over an hour, shortly after being collected from the wild. No fertile eggs resulted.
7. A sample of *T. 16-punctata*, swept from grass with a few *C. 7-punctata*, at King's Forest, Suffolk, in June 1994, were placed in the same box. A male *T. 16-punctata* mated with a female *C. 7-punctata* shortly afterwards. The pair were isolated to allow close scrutiny. The pair remained in *copula* for 71 minutes. the female did not appear to reject the male.
8. A male *C. magnifica* and a female *C. 7-punctata* collected together in Germany by Hinrich Schulenberg, mated. The pair was sent to John Sloggett in Cambridge. No eggs resulted (Sloggett, *pers. comm.*).

Laboratory observations

It is known that isolating *A. 10-punctata* or *A. bipunctata* adults from opposite sex conspecific individuals, for a period of two or more weeks, while keeping them active (temperature 12-28°C) and well-fed on an appropriate aphid diet, will lead these individuals to mate with partners of the other species more readily than is normal (Lusis, unpublished data communicated by I.A. Zakharov; Ireland *et al.*, 1986; Majerus & Kearns, 1989; O'Donald & Majerus, 1993; Majerus, 1994). It was considered possible that this procedure might induce other coccinellid species to copulate. Therefore, at various times over the last ten years, when culturing two or more species of coccinellid, the chance to test this possibility has arisen. In these cases, known virgin females of one species that were in reproductive condition and had been fed on an excess of a principal food (*sensu* Hodek, 1973) for at least two weeks, were offered males of a different species in Petri-dishes, a single pair being placed in each dish. The ladybirds were kept under observation and their behaviour recorded. Copulations that occurred were timed. Pairs were separated after parting, and the females were treated as described above.

The details of pairs of species tested and the results obtained are given in Table 3.

Results and discussion*Matings observed in the wild*

Eighteen interspecific hybrid pairs were recorded in the wild. Of these, 15 were between congeneric species. Of the others, two were between members of the sister genera *Exochomus* and *Chilocorus*. Only one pair involves species that would not be considered closely related, that being the mating between *E. 4-pustulatus* and *C. 7-punctata*.

The initial mounting of the female by the male was only observed in five of the matings. It was notable that in none of these cases did females show strong initial rejection of the male, and insertion of the siphon occurred within two minutes. In the mating between *E. 4-pustulatus* and *C. 7-punctata*, the female began to show vigorous rejection behaviour (kicking back with her hind legs) some 16 minutes after being mounted. The male disengaged after about a minute. The lack of initial rejection of males by females suggests that the females may have been reproductively mature, and ready to oviposit, but that they had been unmated for some period. Females (whether virgin or not) that have been kept isolated from males for a significant period show less rejection behaviour than those that have mated in the last two or three days (Ireland *et al.*, 1986). In the case of the female *C. 7-punctata* that began to reject the *E. 4-pustulatus* male after initially appearing to accept him, her response may have been triggered by some genitalial incompatibility.

Table 3. Results of attempts to induce interspecific hybrid matings between coccinellids by isolating females for two weeks or more before offering a male of a different species

| Male | Female | No. of matings | Mean mating duration (mins.) | No. of eggs | Notes on offspring |
|--------------------------|--------------------------|-------------------------------------|------------------------------|-------------|--|
| <i>A. bipunctata</i> | <i>P. 14-punctata</i> | 2 | 117 | 54 | No development. |
| <i>P. 14-punctata</i> | <i>A. bipunctata</i> | 1 | 83 | 87 | No development. |
| <i>A. bipunctata</i> | <i>A. oblitterata</i> | 5 | 96 | 167 | No development. |
| <i>A. oblitterata</i> | <i>A. bipunctata</i> | 2 | 138 | 473 | No development. |
| <i>H. 4-punctata</i> | <i>H. axyridis</i> | 4 | 164 | 128 | 8 eggs showed signs of development. None hatched. |
| <i>H. axyridis</i> | <i>H. 4-punctata</i> | 2 | 214 | 51 | 3 eggs showed signs of development. None hatched. |
| <i>A. ocellata</i> | <i>A. labiculata</i> | 4 | 98 | 201 | 15 eggs developed. 3 hatched. All died in first instar. |
| <i>A. labiculata</i> | <i>A. ocellata</i> | 7 | 71 | 154 | 11 eggs developed. 6 hatched. All died in first instar. |
| <i>C. 7-punctata</i> | <i>C. magnifica</i> | Would not mate in three replicates. | | | |
| <i>C. magnifica</i> | <i>C. 7-punctata</i> | 3 | 93 | 0 | |
| <i>C. 11-punctata</i> | <i>C. 7-punctata</i> | 4 | 56 | 23 | No development. |
| <i>C. 7-punctata</i> | <i>C. 11-punctata</i> | 1 | 42 | 0 | |
| <i>C. renipustulatus</i> | <i>C. bipustulatus</i> | 1 | 45 | 16 | 2 eggs developed. None hatched. |
| <i>C. bipustulatus</i> | <i>C. renipustulatus</i> | 5 | 39 | 28 | No development. |
| <i>E. 4-pustulatus</i> | <i>C. bipustulatus</i> | 3 | 71 | 53 | 14 eggs developed. None hatched. |
| <i>C. bipustulatus</i> | <i>E. 4-pustulatus</i> | 6 | 38 | 13 | 1 egg developed. It did not hatch. |

Thirteen of the pairs produced eggs. The eggs from five of the pairs, three between *A. bipunctata* and *A. 10-punctata* and two between *E. 4-pustulatus* and *C. bipustulatus*, failed to hatch. The eggs from the matings involving *Adalia* species shrivelled and turned orange after about three days, a pattern which usually indicates that eggs are infertile. It is probable that the females involved were virgins, or at least were devoid of sperm from previous matings. The eggs laid, if they were fertilised at all, showed no signs of

development, indicating that zygotes perished very early in embryogenesis. Conversely, some of the eggs from the two matings between *E. 4-pustulatus* and *C. bipustulatus* did begin to develop, turning grey after three days. The deduction in the case of these two pairs is that the eggs produced were the product of the observed hybrid matings, but that the genetic constitution of the species is sufficiently divergent that the zygotes produced suffer developmental breakdown. The possibility that the zygotes failed to hatch because they became cramped in the eggs before they were ready to hatch, as is known to occur in some hybrids between different species of hawkmoth (Newman, 1965) was considered. However, this does not seem probable given that the two pairs were reciprocal, unless the hybrid zygotes were larger than those of either parent.

The remaining eight pairs produced eggs that did hatch. The egg hatch rates of seven of these were high (>70%). Examination of the progeny from these seven crosses revealed all to be apparently normal individuals of the maternal species. The back-crosses all produced high egg hatch rates, and progeny that were normal. The deduction that the females involved in the hybrid matings had previously been mated by one or more conspecific males is obvious. The final cross, between a male *A. 10-punctata* and a female *A. bipunctata* produced 183 eggs of which only five hatched. These were all raised to adulthood. From examination of the larvae and adults it was obvious that these were true hybrids. The fourth instar larvae were paler than those of *A. bipunctata*, but had the abdominal spotting pattern of this species rather than that of *A. 10-punctata*. The patterns of the adults were variable. Two had pronotal patterns similar to those of the typical form of *A. bipunctata*, the others having pronota more like those of *A. 10-punctata*, but with the spots fused together. The ground colour of the elytra (at three weeks old), was orange in all five cases, and was thus akin to that of *A. 10-punctata*. The elytra of one was marked with a single bold black central spot as in typical *A. bipunctata*. The other four had small dark-brown dots on the elytra. Three had six of these dots, the other having ten, positioned as in a typical *A. 10-punctata*. The legs of all five hybrids were brown as in *A. 10-punctata*. Externally, two of the progeny appeared male, the other three appearing female.

Attempts to back-cross these progeny failed to produce issue. Three of the individuals (one male and two females) did appear to mate normally, however, none of the eggs laid as a result showed any sign of embryonic development.

Dissection of the two males showed each to have severely under-developed testes. The siphon of both males appeared indistinguishable from that of a normal *A. bipunctata*. The ovaries of the females were variable. In one the ovary was extremely under-developed. In the second the left ovary appeared normal, while the right ovary was only partly developed, and the ovarioles were somewhat distorted. The ovaries of the third appeared to be

normal. The genitalia of the three females were all similar. As with female hybrids of these two species described by Ireland *et al.* (1986), the genitalia were more similar to those of *A. bipunctata* than those of *A. 10-punctata*, but in all three the infundibulum was unique, and readily distinguishable from that of either parental species. It is questionable whether, in back-cross matings, males of either parental species would be able to insert their siphos and manufacture a spermatophore efficiently in one of these female hybrids.

Recently collected ladybirds

The observations of interspecific matings between ladybirds recently collected extend the range of species which will attempt or actually mate together. Again most of the pairings observed were of congeneric species, however, two were between individuals from different genera. Both of these matings involved female *C. 7-punctata*, one pairing with a male *Aphidecta oblitterata*, and the other mating, most incongruously with a male *T. 16-punctata*. Because of the difference in size between the sexes in these two pairings, and in particular the minute size of the male *T. 16-punctata*, the genital contact was examined both during the copulation and at the moment of withdrawal. In both cases the impression was that the male's siphos was fully embedded, an impression that was reinforced as the siphos were withdrawn.

There are two possible explanations for the occurrence of interspecific hybrid matings between recently collected individuals. First, males may be stimulated by the close proximity of, or contact with, other coccinellids, particularly if they have not encountered females in the wild for some time. Reproductively mature male ladybirds are known to mount other coccinellids, and some other beetles, rather indiscriminately of species or sex, or even of whether the individual being mounted is alive or dead (Majerus, 1994). Second, recently collected females placed with males may be prepared to accept non-conspecific partners if the female has not copulated for some time. This may be the case when population density is low, and appropriate food is common so that members of a species do not become concentrated together on a few patches of resource-rich habitat. These two possibilities are not mutually exclusive.

In three of the cases (numbers 1, 3 and 6) it seems probable that what might be termed "frustrated female syndrome" was the primary cause of the interspecific pairings. With respect to pair 1, both *Coccinella 5-punctata* and *C. 11-punctata* were recorded as being rare in the Spey Valley in 1987 (Duncan, *pers. comm.*). Indeed, the female *C. 5-punctata* in question is one of only two recorded from that region since the early 1950s (Majerus & Fowles, 1989; Majerus, 1994). That said, the fact that this female produced normal *C. 5-punctata* progeny suggests that she was not a virgin. In the case of pair 3, the female species, *Exochomus 4-pustulatus*, was unusually scarce in the Lakenheath area in 1987. The fact that the female that accepted a

C. bipustulatus male failed to produce any eggs suggests that she was devoid of conspecific sperm. The same argument applies to the case of the female *C. 7-punctata* that mated with *A. obliterata* (pair 6).

The instances of a male *E. 4-pustulatus* which attempted to mate with both a *Chilocorus renipustulatus*, and a male *A. bipunctata* (pair 2) and of the male *C. 7-punctata* that attempted to mate with several *C. 11-punctata* (pair 4) are both probably the result of male "randiness". Certainly the male *E. 4-pustulatus* attempted to mount any ladybird he came into contact with.

The other two pairings fit less well with either the female frustration syndrome or male randiness explanations. The pairing of an *A. bipunctata* with an *A. 10-punctata* only 24 hours after they were removed from overwintering sites is certainly difficult to explain. Usually female *A. bipunctata* have to be fed for several days after removal from overwintering sites before they mate. This is probably because ovaries that become dormant in the winter have to be reactivated and resourced. The fact that no eggs were laid by the female for 11 days after the mating suggests that the female was not bearing ovaries with mature eggs. The *T. 16-punctata* that mated with a female *C. 7-punctata* was one of 39 collected with five *C. 7-punctata* by sweeping long grass. All 44 ladybirds were placed in the same small perspex container. Both species were very common at the site making the female frustration extremely unlikely. It is possible that the male may have been stimulated by the proximity of conspecific females in the box, and simply mounted the wrong partner. In such a case, the female would usually reject a ladybird of another species. That this female *C. 7-punctata* did not reject the male may be a consequence of his very much smaller size. The female may simply not have realised what was going on.

None of these pairings produced true hybrid offspring. In all cases, either no eggs were laid, or the eggs were infertile, or the eggs were fertile but the progeny produced were normal individuals of the maternal species.

Laboratory pairings

Most of the pairings set up were of congeneric species. The exceptions were crosses of *A. bipunctata* with both *P. 14-punctata* and *A. obliterata*, and of *E. 4-pustulatus* and the two British *Chilocorus* species. The protocol of keeping females isolated from males for two weeks or longer proved successful in inducing hybrid mating in all cases except one. The general conclusion is that the rejection behaviour that female ladybirds of most species show towards non-conspecific males can be broken down easily. Interestingly, there was some indication that sympatric species mated less readily than those that do not have overlapping distributions. Thus, the pairs of species that hybridised most easily were *Anatis ocellata* and *A. labiculata* from England and the USA respectively, and *Harmonia 4-punctata* and *H. axyridis* from England and Japan respectively. The reason for this may be that part of the female's mate recognition system involves a rejection

response to males of other species that they encounter reasonably frequently in evolutionary time. This part of the recognition system is only likely to extend to sympatric species that share similar habitat requirements.

The one pairing that did not produce a copulation involved female *C. magnifica* that were placed with male *C. 7-punctata*. This failure is of particular interest because the reciprocal pairing did produce matings, although no eggs resulted. *Coccinella magnifica* is a myrmecophile, usually living in close proximity to nests of the wood ant *Formica rufa* (Donisthorpe, 1920; Pontin, 1960; Majerus, 1989). It is morphologically very similar to *C. 7-punctata*, and often occurs with it. Speculation on the evolutionary divergence of these two species has concentrated on the ecological questions of why *C. magnifica* lives close to ants, and why it does not live elsewhere (see Majerus, 1994 for review). Less consideration has been given to the way in which gene flow between the two species was arrested. The fact that female *C. magnifica* would not accept male *C. 7-punctata*, even when the females had been prevented from mating for a considerable period, suggests that the mate recognition system of females of this species is stronger than that of most.

Only two of the successful pairings (*C. magnifica* male x *C. 7-punctata* female and *C. 7-punctata* male x *C. 11-punctata*) failed to produce eggs. However, the eggs from six of the pairings did not show any sign of development, indicating either that the eggs had not been fertilised, or that the zygotes perished early in embryogenesis.

A small proportion of eggs developed from seven of the hybridisations. However, in only two of these, the reciprocal crosses of *A. ocellata* and *A. labiculata* did any of the eggs hatch, and in both instances all the larvae died in the first instar. Interestingly the two reciprocal sets of crosses between non-sympatric congeneric species (*A. ocellata* x *A. labiculata* and *H. 4-punctata* x *H. axyridis*) all showed some embryonic development, perhaps suggesting that the divergence between these species may not be as great as that between *C. 7-punctata* and either *C. magnifica* or *C. 11-punctata*.

When are interspecific hybrid matings likely to occur in the wild?

The ease with which females can be induced to mate with males from other species suggests that interspecific hybrid matings may occur in the wild whenever females of a species do not encounter males very frequently. This may occur in three situations. First, when a species is at very low density, males and females may simply not come across each other very often. This may be the result of a species either being very rare, or being less rare but distributed widely and thinly across the environment.

Second, there is a period towards the end of the main reproductive season in Britain, but before the new generation of adults have emerged from their pupae and become reproductively mature, when the sex ratio of adults in mating condition may become strongly female biased. This is because the

longevity of females is slightly greater than that of males. Such a bias is only likely to occur to any appreciable extent in populations that have a single generation each year.

Third, the sex ratio of some species of ladybird may be female biased due to the occurrence of male-killing bacteria. A number of species of coccinellid are known to be infected by endosymbiotic bacteria that kill male embryos but not female embryos. This may result in a female bias in the population sex ratio. For example, about 7% of *A. bipunctata* in Cambridge are infected with a male-killing *Rickettsia*-like bacterium (Hurst *et al.*, 1992; Werren *et al.*, 1994). This results in a pupal population comprising 54% females and 46% males (Hurst *et al.*, 1993). Similarly, some 30% of females in some Russian populations of *A. bipunctata* are infected with a spiroplasma male-killer (Zakharov *et al.*, in prep.; Hurst *et al.*, in prep.). In these populations the proportion of females is about 60%. The bias may be even higher in Japanese populations of *H. axyridis*, where up to 48% of females may be infected by a male-killer (probably a spiroplasma) (Majerus *et al.*, in prep.). The female biases in these populations obviously provide conditions in which females may not encounter males as often as they would were the population sex ratio 1:1.

Conclusion

In most ladybirds, conspecific mate recognition appears to be primarily a function of females. Females that are in reproductive condition and have not been denied access to males for a significant period, vigorously reject non-conspecific males. However, if females are denied access to males for a substantial period, their species recognition system appears to become overridden by their drive to mate. In such circumstances, females may accept a male of another species both in the laboratory and in the field. The male role in species recognition appears to be less important. Observations suggest that male ladybirds in reproductive condition attempt to mount any others they come into contact with irrespective of their sex, species or state of health. Inappropriate encounters (i.e. those with other males, or non-conspecific females) are, in general, only broken off in response to rejection behaviour, or in some cases possibly a lack of an appropriate stimulus from the female.

It is probable that the conditions required to induce females to accept non-conspecific males are rare in the wild. However, they may occur either when a species occurs at very low density, or when the overwintering generation begins to die off prior to the eclosion of the new generation of adults. It is also possible that in species bearing male-killing endosymbionts at high frequency, the sex ratio becomes sufficiently female biased to reduce the encounter rate between females and conspecific males to a level where hybrid matings become a more common occurrence.

One important consequence of the occurrence of inter-specific hybrid matings is that they will allow the transmission of sexually transmitted

diseases between species. For example, inter-specific hybridisation may be implicated in the finding that the sexually transmitted mite *Coccipolipus hippodamiae* infests a wide range of coccinellid species (Webberley *et al.*, in prep.).

Acknowledgements

I wish to thank those members of the Cambridge Ladybird Survey who sent in records of hybrid matings. At various times over the last 12 years, Dominique Betrand, Helen Forge, Greg Hurst, Heather Ireland, Peter Kearns, Tamsin Majerus, Emma Purvis, Mark Ransford, John Sloggett, Linda Walker and Mary Webberley have helped with the maintenance of ladybird cultures. I am also grateful to them for constructive discussion of this work at various times, and for bringing hybrid matings to my attention in the lab. The work was carried out in a laboratory funded by The Wolfson Foundation. The research was funded by donations from members of The Cambridge Ladybird Survey, and the Department of Genetics, University of Cambridge.

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Some notable Devon Lepidoptera records

Specimens of *Pediasia contaminella* Hb. (Pyralidae) were found on the Maer Local Nature Reserve, Exmouth, East Devon on 20.vii.1996, during a moth event that was being run by East Devon District Council with myself operating the moth traps. This species has been recorded from Dawlish Warren in the past but this locality is in a different tetrad in the SY section of the OS map, whereas the old record is in the SX section.

A specimen of *Ancylosis oblitella* Zell. (Pyralidae) was taken on Dawlish Warren, South Devon on 19.vii.1996 during a routine moth recording session. A second example was later captured on the Axmouth Saltings on 4.viii.1996. I understand that there have been very few records of this species in the past.

A specimen of the Lace Border *Scopula ornata* Scop. (Geometridae) was captured in the Rothamsted trap in Yarner Wood on 20.viii.1984. The

specimen was identified by Adrian Riley and is retained at the Yarner Wood Forest Office. As far as I am aware this was the first specimen of this species to be captured in Devon.

A specimen of the Sword Grass *Xylena exsoleta* L. (Noctuidae) was captured in the Rothamsted trap in Yarner Wood, Dartmoor, Devon on 7.xii.1994. The specimen is retained at the Yarner Wood Forest Office and was subsequently confirmed by myself on 25.vii.1996. As far as I can see, there have been seven other historic sightings of this species in Devon.

A specimen of Haworth's Minor *Celaena haworthii* Curt. was taken by Mr A. Jenkins at Chardstock, Devon on 18.viii.1996; there have been specimens of this species taken on Dartmoor in the past although none of these records have been published. If anyone can help to rectify this lack of records of this species it would prove to be very useful. I would like to thank Mr Jenkins for allowing me to publish this finding; the specimen is in the collection of the author of this note.

Finally, following my earlier note (*Ent. Rec.* **108**: 148), I have now confirmed that the Bloxworth Snout *Hypena obsitalis* Hb. is in fact breeding at Churston, South Devon. Larvae were collected on 2.vii.1996 and were bred through to adult on 18.vii.1996 (male) and 22.vii.1996 (female).

– ROY MCCORMICK, Devonshire Lepidoptera Recorder, 36 Paradise Road, Teignmouth, Devon TQ14 8NR.

Observation of a second generation Orange-tip *Anthocharis cardamines* L. (Lep.: Pieridae)

Throughout most of Hertfordshire, the Orange-tip remains one of our most common butterflies. The 1996 season proved no exception, with large numbers being observed on the Environmental Change Network (ECN) common butterfly census conducted on the Rothamsted estate. Males of the Orange-tip are usually on the wing in late April and early May. The earliest siting for Hertfordshire is 13 April 1961 and the latest, 8 July 1902 (Sawford, 1987, *The Butterflies of Hertfordshire*, Castlemead, Ware). Very occasionally, a second generation may emerge in late summer, (Sawford, 1987 *op. cit.*, Thomas and Lewington, 1991, *The Butterflies of Britain and Ireland*, Dorling Kindersley, London). On 5 September 1996, on a sunny afternoon with a light breeze, whilst working in a garden in the village of Redbourn, OS grid reference TL 103122, a male Orange-tip flew in and remained briefly but long enough to observe its characteristic orange wing-tips. This observation is nearly two months later than any previous record for Hertfordshire. – JOHN E. BATER, Department of Entomology and Nematology, IACT Rothamsted, Harpenden, Hertfordshire AL5 2JQ.

THE CORRECT NAME OF THE NORTH AMERICAN GREAT LEOPARD MOTH

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A CORRECTION is necessary to the scientific name given by Young (1995) to the Great Leopard Moth found in 1994 in Aberdeen, which was apparently imported from Houston, Texas, USA. The name of this species has been the subject of some confusion in the past, even in its native North America, and it has been incorrectly cited in the British literature. According to Watson and Goodger (1986: 30), the correct scientific name for this species is *Hypercompe scribonia* (Stoll, [1790]) (Lepidoptera: Arctiidae) which occurs naturally in central and eastern North America.

In Heath and Emmet (1979: 110), de Worms used the name *Ecpantheria deflorata* (Fab.) for a specimen of the Great Leopard Moth that was imported with American oak to Edinburgh but gave the type locality of the species as "India". This confusion is due to an incorrect citation: "*Bombyx deflorata* Fabricius, 1794, *Ent. Syst.* 3(2): 127". This refers to a different species, *Hyblaea deflorata* Fabricius, which was described from India and is now placed in the genus *Hypocala* (Lepidoptera: Noctuidae). The correct reference for *Bombyx deflorata* is Fabricius, 1775, *Syst. Ent.*: 582.

However, the issue is further complicated as *B. deflorata* was described from South America and, according to Watson and Goodger (1986: 30), the correct name for the North American species should be *scribonia* Stoll (formerly regarded as a junior synonym of *deflorata*). This species is currently assigned to the genus *Hypercompe* Hübner, [1819], a senior synonym of *Ecpantheria* Hübner, [1820].

The citation in Heath and Emmet (1979) should read:

"HYPERCOMPE Hübner

Hypercombe Hübner, [1819], Samml. exot. Schmett. 1: pl. [191].

Ecpantheria Hübner, [1820], Verz. bekannt. Schmett.: 183.

HYPERCOMPE SCRIBONIA (Stoll)

Phalaena (Noctua) scribonia Stoll, [1790], Uit. Kapell. (Aanhangsel): 177, 184, pl. 41, fig. 3.

Bombyx deflorata sensu auct.

Type locality: New York."

The entry in Bradley and Fletcher (1986: 56), no. 2096a should also be amended accordingly.

As no previous illustration of this species has been given in the British literature we figure both specimens referred to by Young (1995) (Figs. 1 & 2).



Fig. 1. *Hypercompe scribonia* (Stoll), female, Aberdeen, 9.vi.1994.

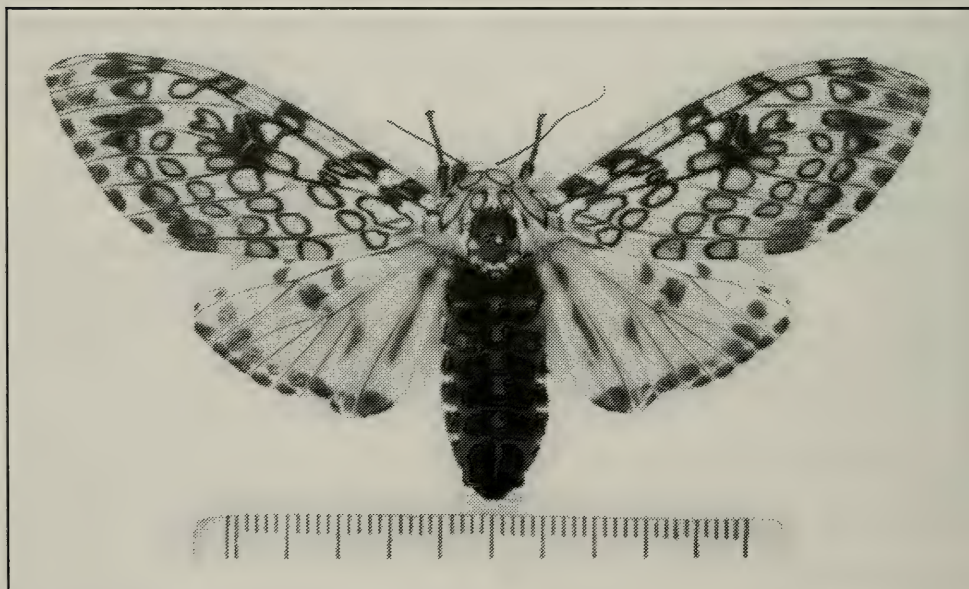


Fig. 2. *H. scribonia* (Stoll), female, 18.vii.1974.

Scale bar = millimetres

PLATE A

Acknowledgements

We thank Dr Mark Shaw, National Museums of Scotland, for the loan of the two specimens for illustration and Mr P. Hurst, the Photographic Unit, The Natural History Museum, for the black and white photographs.

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OBITUARY**Denis Frank Owen, MA, PhD, DSc, FLS**

Denis Owen died of cancer on 3 October 1996. He was an enthusiastic field naturalist and a prolific writer, publishing some 250 scientific papers, ten books and numerous articles in many different publications. Besides his intellectual and academic achievements he maintained an insatiable zest for field natural history, operating the m.v. traps in his rural Oxfordshire garden to within three days of his death.

While still at school he joined the London Natural History Society and quickly impressed the senior members of the Society. He took a prominent part in the Society's ecological survey of the bombed sites of central London, publishing his first entomological paper *The macrolepidoptera of the Moorgate, London, bombed sites* (*Entomologist* **82**: 59-62) in 1949. Later that year he was called-up for National Service with the Royal Army Ordnance Corps. He was fortunate in some ways that he spent most of his two years' service in isolated camps adjacent to the Solway Firth, thus giving him splendid opportunities to familiarise himself with the rich wildlife to be found there, especially the northern species of Lepidoptera. It was here that he captured and described in 1952 a new aberration, *inocellata* Owen, of *Erebia aethiops* (Esper) (*Entomologist* **85**: 92).

Towards the end of his army service he was invited by Dr David Lack, Director of the Edward Grey Institute of Field Ornithology at Oxford University, to work with him on the ecology of titmice, grey herons, rooks and swifts, on which he published several papers in his own right. He maintained unabated, however, his interest in entomology, studying insect migration with the writer in south-west France in 1953, for example, and continuing to publish prolifically on the subject.

In 1956 he was given a belated opportunity to read for an Honours Degree in zoology at Oxford and after graduating in 1958 he went to the USA to take up a lectureship at the University of Michigan, gaining his doctorate there in 1961. He became well-known in entomological and ornithological circles in the United States as papers continued to flow steadily from his pen, including four on industrial melanism in North American moths. His first

contribution to the *Entomologist's Record* was published in 1950 and his last one early in 1996 was also concerned with melanism, in *Biston betularia* L. (108: 23).

In June 1962 he took up a lectureship in Zoology at Makerere University College in Kampala, Uganda. This new appointment enabled him to extend his interest to the African tropics, especially the genetics and population ecology of butterflies and snails. In 1966 his first book, *Animal Ecology in Tropical Africa*, was published. That year a move to West Africa as Professor of Zoology at the University of Sierra Leone enabled him to expand his studies to that region, and eventually led to the publication of his internationally acclaimed book *Tropical Butterflies* (1971).

In late 1973 Denis returned to the UK to become Principle Lecturer in the Department of Biology at the Oxford Polytechnic, now Oxford Brookes University, where he introduced research to what was then a predominantly teaching institution. Apart from his academic work he contributed frequently to magazines such as the *New Scientist* and *Country Life*, and to BBC radio.

Barely two weeks before he died Owen received an honorary DSc. from his university, bravely making a humorous acceptance speech although in considerable discomfort. He retired in April 1996 and was looking forward to completing some of his outstanding long-term research projects, such as the genetics and population ecology of *Biston betularia*, the evolution and mimetic relationships of African butterflies, the evolutionary history of the butterflies of the Atlantic Islands and an evaluation of the work of the founder of the *Record*, J.W. Tutt. A paper shortly to be published posthumously completed his work on *Callimorpha dominula* L., in which he followed on the early work begun at Cothill by the late E.B. Ford.

Denis Owen had a magnetic personality combined with prodigious intellectual and physical strength, and packed more into his 65 years than most would in a hundred. Although outspoken he tempered it with an infectious sense of humour. His love and command of the English language, backed up as it was by extensive reading by no means confined to natural history, made him an excellent communicator and broadcaster. His name will be perpetuated in those insects named after him: a West African hawkmoth *Phylloxiphia oweni* and a whole genus of Ichneumonids, *Owenus*. He will be remembered with great affection. We offer our sympathy to his first wife, Jennifer, their son and daughter, and his second wife, Clare.

A Denis Owen Memorial Fund has been set up c/o the Linnean Society of London, Burlington House, Piccadilly, London W1V 0LQ.

John F. Burton

D.F. Owen, RIP

The committal service for the late Denis Owen took place on 10 October 1996 at Oxford Crematorium, which is on the road which leads out from

Oxford to Bernwood Forest where many of Denis's PhD students did their fieldwork. The service was attended by his family, close friends, colleagues from Oxford Brookes University and some of those past PhD students, including myself and Rachel Thomas, whom I first met at Oxford Polytechnic, as Oxford Brookes then was, and who later became my wife.

On the way into the service with Derek Whiteley, I found a dead moth lying on its back on the tarmac by the chapel door. I picked up the insect and was able to identify it immediately as Blair's Shoulder-knot *Lithophane leautieri* Boisd. This, of course, was a moth which particularly interested Denis, who wrote a couple of papers on it and arranged for co-workers to investigate its recent colonisation of Britain. Derek Whiteley prepared a fine illustration of the moth, which adorned one of those papers. The original artwork hung on a wall in the "Poly" throughout my time there. The moth was recorded for the first time ever in Bernwood Forest during my PhD work in the mid-1980s. It is now well established and common in the Oxford area and no doubt its foodplant grows near the Crematorium chapel.

Before entering the service, I placed the moth in one of the flower arrangements. After the service I decided to retrieve the moth but failed to find it. If I were superstitious, I am sure I would regard the finding, and even the subsequent disappearance, of that particular moth, with all its associations, as a good omen. But this was all a matter of coincidence, wasn't it?

Rest in peace, Denis Owen. You will not be forgotten.

Paul Waring

Fletcher's Pug versus Pauper Pug *Eupithecia egenaria* H.-S. (Lep.: Geometridae)

Reflection on the use of English names for British butterflies and moths is sparked by Bernard Skinner's thoughtful article (*Ent. Rec.* **108**: 284-285). Vernacular epithets are available for most taxa and eligible for general purposes, unfettered by the rules that apply to the latinised scientific names under the zoological code (International Code of Zoological Nomenclature). Their application is governed chiefly by suitability and a consensual theme with an awareness of the principle of priority. An English name, if consistently and logically applied, can be a useful surrogate if a scientific name, although always preferable, is difficult to call to mind or has been changed.

Indeed, many species have more than one common name. Species that are widely distributed geographically often accumulate an assortment, eg. the Scarce Bordered Straw *Heliothis armigera* Hb. (Noctuidae), which is an abundant agricultural pest found from Europe to Australasia, is also known as the Corn Earworm, Old World Bollworm, African Cotton Bollworm, the

Tomatoworm and, at one stage, erroneously as the American Bollworm. Conceivably, with global warming causing a stronger northerly drift, the "Scarce" element in the present British appellation may require emendation. Other such "Status" names at risk could be mentioned, and one wonders whether converse misnomers might arise among common species in decline, eg. the Common Clothes Moth *Tineola bisselliella* Hummel (Tineidae).

The scientific name *Eupithecia egenaria* appears in *An accentuated list of the British Lepidoptera* (1858: 25), and the derivation of the specific name is given as "poor, needy". So far as is known, early records of *egenaria* were due to misidentifications of Freyer's Pug *E. intricata* Zett. and the Golden-rod Pug *E. virgaureata* Doubl. Nevertheless, Heslop (1947, *Indexed Check-List of British Lepidoptera*) included the species as British and introduced the common name Pauper Pug. The species is, however, excluded from the revised version (1952-62, *Entomologist's Gazette* 10-13).

The first fully authenticated finding of *egenaria* as a resident species in Britain was in June 1962. Mere (1962, *Entomologist's Gazette* 13: 155-158) relates the sequence of events that led to its discovery and proposed the name Fletcher's Pug to commemorate the role played by Steve Fletcher of the Natural History Museum, who specialised in Geometridae and suggested searching for this species in the stands of Large-leaved Lime *Tilia platyphyllos* in the Wye Valley in Monmouthshire. Heslop's epithet Pauper Pug was used in the *Log Book* (Bradley & Fletcher, 1979) in deference to its seniority. But at my instigation it was replaced by Fletcher's Pug in the *indexed list* (Bradley & Fletcher, 1986). To me the appellation Pauper Pug is unuseful, the moth being no more pauperate than most of its congeners. On the other hand the commemorative name Fletcher's Pug has connotations of inspired field work and discovery; but perhaps I am not totally impartial since we were colleagues at the BM for half a century.— J.D. BRADLEY, Conifers, Chard Junction, Chard, Somerset TA20 4QJ.

The larva of *Hyles lineata livornica* Esper (Lep.: Sphingidae) in Shropshire

On 26 July 1996 a single larva of *Hyles lineata livornica* was found on rosebay willowherb *Chamaenerion angustifolium* near Quatford, Shropshire (VC 40). In captivity the larva moulted once and was fed on rosebay until full-grown; although it started to construct a rather flimsy cocoon amongst dried leaves and sand, it failed to pupate and perished on 11 August, possibly from a viral infection. The capture site was an open clearing with coniferous woodland on the National Trust Estate at Dudmaston (grid reference SO746897), where the hostplant was abundant over disturbed ground following recent tree felling operations. Despite further searches on 26 July and again the following week, no further larvae were located.—A.P. FOSTER, 23 The Dawneys, Crudwell, Malmesbury, Wiltshire SN16 9HE.

MICROLEPIDOPTERA RECORDED FROM SOUTH WALES IN 1995, INCLUDING FOUR SPECIES NEW TO WALES

DAVID SLADE

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DURING THE SUMMER of 1995, Darren Mann and I were contracted by the Zoology Department of the National Museums and Galleries of Wales to collect material for their entomological collections. Around 30 sites in South Wales were visited between June and October, and each site was visited at least twice during this period. Unfortunately since it was necessary to collect material from all orders, it was impossible to concentrate on any one group. Also, we were able to go light trapping only four times. Since this is generally accepted as the main method for collecting Lepidoptera, it easily accounts for the low number of Microlepidoptera recorded, which is just over 150 to date.

A provisional list of the Microlepidoptera resulting from this field work was forwarded to David Agassiz for comment, who in turn passed it on to Maitland Emmet, who stated (*pers. comm.*) that four of the species listed were new to Wales, and that over 30 of the species listed from Glamorgan (VC41) had not previously been recorded from that vice-county. However, since this list was initiated, records from earlier this century have come to light, indicating that although unpublished, many of the species added to the Glamorgan list were known to occur in the area by Hallett (1918, and his notes).

Some records from a malaise trap survey at Kenfig NNR in 1993 have also been included.

Species of particular interest:

Phyllonorycter saportella (Duponchel) (Gracilariidae)

Provisional second Welsh record. This species was previously recorded in Wales from Denbighshire (VC50) by J.S. Ashworth (1855). It is an oak feeder, but my specimen was taken at light. I will be much happier with the record once the larval mines have been located, especially since there are very few oak trees at Kenfig.

Coleophora trifolii (Curtis) (Coleophoridae)

New to Wales. This species is recorded from every adjacent English county, as well as from the Isle of Man, and five Irish counties. It has presumably been overlooked in Wales. It occurs on dry pastures and waste-ground, where the foodplant Melilot *Melilotus* occurs.

Blastobasis decolorella (Wollaston) (Blastobasidae)

New to Wales. Since this species feeds in leaf-litter, has no specific habitat requirements and is extending its range, I would expect to find it throughout the region.

Aethes dilucidana (Stephens) (Tortricidae)

New to Wales. This species inhabits calcareous soils, feeding on Wild Parsnip, *Pastinaca* and Hogweed, *Heracleum*. There is no obvious reason for it not to occur at other similar sites in South Wales.

Eucosma tripoliana (Barrett) (Tortricidae)

New to Wales. Although mainly restricted to the southern and eastern coasts of England, it has been recorded from across the Bristol Channel in Somerset. It is a saltmarsh species feeding on sea aster, *Aster tripolium*.

Species not covered by any easily obtainable publication were either identified by comparison with the museum's collection (eg *Aristotelia ericinella* (Zeller) (Gelechiidae)), or were passed on to David Agassiz who kindly identified them for me (or at least pointed me in the right direction). Material is still being processed, and the list could double when some of the more difficult species have been identified.

The following list represents all the species of microlepidoptera from the 1995 season identified to date. Species new to Wales are printed in bold type. To save space, each site has been given a number code, as represented in the following table.

Glamorgan (VC41)

| Site Number | Site Name and Status | 10km Grid Reference | Habitat |
|-------------|---------------------------|---------------------|---|
| 1 | Aberthaw Leys SSSI | ST06 | Saltmarsh, coastal shingle, pool. |
| 2 | Atlantic Great Wharf SSSI | ST27 | Coastal grazing marsh, fen, ditches. |
| 3 | Crymlyn Bog NNR | SS69 | Lowland fen, carr. |
| 4 | Crymly Burrows SSSI | SS79 | Coastal dune, slacks and scrub woodland. |
| 5 | Hawordian LNR | ST17 | Damp grassland, marsh and secondary woodland. |
| 6 | Kenfig NNR | SS78 | An extensive dune system, including good slacks with temporary pools, and a large permanent pool. |
| 7 | Merthyr-mawr Warren | SS87 | Calcareous dunes, saltmarsh, woodland. |
| 8 | Michealston Marsh | ST17 | Secondary oak/ash woodland, marsh and pool. The river Ely forms part of the site boundary. |
| 9 | Oxwich Bay NNR | SS58 | Dunes, woodland, saltmarsh. |
| 10 | Plymouth Great Wood | ST17 | Mixed woodland. |
| 11 | Tydu Marsh | ST17 | Marshland and secondary woodland. |
| 12 | Tidal sidings | ST17 | Scrubland. |
| 13 | Waterhall Plantation | ST17 | Secondary woodland, grassland and marsh. |

| Site Number | Site Name and Status | 10km Grid Reference | Habitat |
|-------------|----------------------------------|---------------------|---|
| 1 | Bargain Woods | SO50 | Plantation woodland. |
| 2 | Cwm Merddog LNR | SO10 | Open woodland, interspersed with wet flushes and open meadow. |
| 3 | Gellyrhydd Farm (nr Crickhowell) | SO21 | Unimproved pastures, alongside a tributary of the river Usk. |
| 4 | Magor Marsh LNR, SSSI | ST48 | The last remnant fenland on the Gwent Levels. Contains areas of ponds, ditches, reedbeds and willow carr. |
| 5 | Peterson Great Wharf | ST27 | Coastal grazing marsh, fen, ditches. |
| 6 | Wyndcliff (Wye Valley) | ST59 | Broadleaved woodland, including small-leaved lime. |

| Site Number | Site Name and Status | 10km Grid Reference | Habitat |
|-------------|----------------------|---------------------|--|
| 1 | Cae Bryntywarch LNR | SN82 | Damp unimproved herb-rich pasture with a dry bank and wet flushes. |
| 2 | Coad Dyrysiog LNR | SN93 | A mixed broadleaved woodland on a steep bank of red sandstone. Some wet flushes. |
| 3 | Daudraeth Illtud LNR | SN92 | Moorland, including a collection of pools and peat-filled hollows. Part of the site has blanket bog vegetation, with many flushes and a basin fen. |
| 4 | Pont-nedd-fechan LNR | SN80 | Upland birchwood |
| 5 | Vicarage Meadows LNR | SN85 | Permanent pastures, including both dry and damp meadows. |

0464 *Plutella xylostella* (Linnaeus) VC35 2(viii), VC41 3(vii),
6(vii, m.v.), 13(vii, m.v.)

VC41 = Glamorgan sites; 3 = Crymlyn Bog; 6 = Kenfig NNR; 13 = Waterhall Plantation. All from July, with the Kenfig and Waterhall Plantation specimens taken at m.v. light.

Voucher material is held at the NMW, Cathays Park, Cardiff, under the accession number, NMW.Z.1995.033.

I would greatly appreciate any records of Microlepidoptera from the vice-county of Glamorgan for inclusion in a forthcoming review of the county fauna.

Nepticulidae

- 0019 *Bohemannia quadrimaculella* (Boheman) VC41 6(vii, m.v.)

Tischeriidae

- 0125 *Emmetia marginea* (Haworth) VC41 6(ix)

Incurvariidae

- 0130 *Incurvaria masculella*
([Denis & Schiffermüller]) VC41 6(vii)

Tineidae

- 0219 *Nemapogon ruricolella* (Stainton) VC41 13(vii)

Gracillariidae

- 0286 *Caloptilia alchimiella* (Scopoli) VC41 13(vii, m.v.)
0288 *C. stigmatella* (Fabricius) VC41 6(vii, m.v.)
0297 *Calybites auroguttella* (Stephens) VC41 6(vii)
0319? *Phyllonorycter saportella* (Duponchel) VC41 6(vii, m.v.)

Choreutidae

- 0385 *Anthophila fabriciana* (Linnaeus) VC41 6(vii), VC42 2(viii)

Glyphipterigidae

- 0396 *Glyphipterix fuscoviridella* (Haworth) VC41 7(v)
0397 *G. thrasonella* (Scopoli) VC35 3(vi), VC41 11(vi)
0470 *Orthotelia sparganella* (Thunberg) VC41 6(vii, m.v.),
8(vii, m.v.), 13(vii, m.v.)

Yponomeutidae

- 0410 *Argyresthia brockeella* (Linnaeus) VC41 3(vii), 8(vi),
13(vii, m.v.)
0411 *A. goedartella* (Hübner) VC41 6(vii, m.v.)
0424 *Yponomeuta evonymella* (Linnaeus) VC41 13(vii, m.v.)
0425 *Y. padella* (Linnaeus) VC41 6(vii, m.v.)
0428 *Y. rorrella* (Hübner) VC41 6(vii, m.v.)
0449 *Prays fraxinella* (Bjerkander) VC35 6(vi)
0455 *Ypsolophia scabrella* (Linnaeus) VC41 8(vii, m.v.)
0460 *Y. parenthesella* (Linnaeus) VC35 2(viii), VC42 1(viii)
0461 *Y. ustella* (Clerck) VC42 2(viii)
0464 *Plutella xylostella* (Linnaeus) VC35 2(viii), VC41 3(vii),
6(vii, m.v.), 13(vii, m.v.)

Schreckensteiniidae

- 0485 *Schrecksteinia festaliella* (Hübner) VC41 3(vii)

Coleophoridae

- 0490 *Coleophora lutipennella* (Zeller) VC41 6(vii), 13(vii)
 0492 *C. flavipennella* (Duponchel) VC41 13(vii)
 0493 *C. serratella* (Linnaeus) VC41 6(vii)
 0504 *Coleophora lusciniapennella* (Treitschke)
 = *viminetella* Zeller VC41 4(ix, larvae)
 0510 *C. juncicolella* Stainton VC41 3(vii)
 0512 *C. binderella* (Kollar) VC41 6(vii, m.v.)
0516 *C. trifolii* (Curtis) VC41 1(vii)
 0518 *C. mayrella* (Hübner) VC41 6(vii)
 0519 *C. deauratella* Lienig & Zeller VC41 6(vii)
 0530 *C. lixella* Zeller VC41 6(vii, m.v.)
 0547 *C. discordella* Zeller VC41 6(vii)
 0563 *C. argentula* (Stephens) VC41 12(x, larvae)
 0573 *C. atriplicis* Meyrick VC41 1(vii)
 0582 *C. glaucicolella* Wood VC41 6(vii)
 0583 *C. tamesis* Waters VC41 3(vii), 6(vii, m.v.)
 0587 *C. caespitiella* Zeller VC41 2(vi)

Elachistidae

- 0609 *Elachista monosemiella* Rössler VC41 6(vii-viii, 1993,
 = *cerusella* (Hübner) Malaise), 8(vii, m.v.),
 13(vii, m.v.)

Oecophoridae

- 0658 *Carcina quercana* (Fabricius) VC41 3(vii, m.v.), 6(vii, m.v.)
 0701 *Agonopterix ocellana* (Fabricius) VC41 3(ix)

Gelechiidae

- 0726 *Metzneria metzneriella* (Stainton) VC41 6(vii, m.v.),
 13(vii, m.v.)
 0731 *Eulamprotes atrella* ([Denis & Schiffermüller]) VC41 6(vii)
 0733 *E. wilkella* (Linnaeus) VC41 6(viii-ix), 1993,
 Malaise)
 0752 *Aristotelia ericinella* (Zeller) VC41 3(vii)
 0779 *Bryotropha affinis* (Haworth) VC41 6(vii-viii, 1993,
 Malaise)
 0782 *B. senectella* (Zeller) VC41 6(vii)
 0787 *B. terrella* ([Denis & Schiffermüller]) VC41 6(vii)
 0812 *Scrobipalpa instabilella* (Douglas) VC41 4(vii)
 0819 *S. costella* (Humphreys & Westwood) VC35 2(viii),
 VC41 6(vii-viii, 1993,
 Malaise), 8(vii, m.v.)
 0855 *Acompsia cinerella* (Clerck) VC41 6(vii, m.v.)
 0858 *Hypatima rhomboidella* (Linnaeus) VC41 13(vii), VC42 2(ix)
 0859 *Psoricoptera gibbosella* (Zeller) VC41 13(vii, m.v.)
 0868 *Brachmia rufescens* Haworth) VC41 6(vii, m.v.),
 13(vii, m.v.)

Blastobasidae

- 0873 *Blastobasis lignea* Walsingham VC41 13(vii, m.v.)
0874 *B. decolorella* (Wollaston) VC41 3(vii), 4(ix)

Batrachedridae

- 0878 *Batrachedra praeangusta* (Haworth) VC42 3(viii)

Momphidae

- 0886 *Mompha ochraceella* (Curtis) VC41 6(vii, m.v.)
 0893 *M. epilobiella* ([Denis & Schiffermüller]) VC35 4(x)

Cosmopterigidae

- 0898 *Limnaecia phragmitella* Stainton VC41 8(vii, m.v.),
 13(vii, m.v.)
 0904 *Spuleria flavicaput* (Haworth) VC41 6(vii, m.v.),
 13(vii, m.v.)

Tortricidae

- 0926 *Phalonidia manniana*
 (Fischer von Rösslerstamm) VC41 6(vii)
 0959 *Cochylidia rupicola* (Curtis) VC41 6(vii)
 0937 *Agapeta hamana* (Linnaeus) VC41 6(vii, m.v.), 8(vii, m.v.)
0949 *Aethes dilucidana* (Stephens) **VC41 4(vii)**
 0964 *Cochylis dubitana* (Hübner) VC41 4(vii)
 0970 *Pandemis cerasana* (Hübner) VC41 6(vii)
 0972 *P. heparana* ([Denis & Schiffermüller]) VC41 6(vii, m.v.),
 8(vii, m.v.), 13(vii, m.v.)
 0977 *Archips podana* (Scopoli) VC41 6(vii)
 0994 *Clepsis consimilana* (Hübner) VC41 8(vii, m.v.)
 0993 *C. spectrana* (Treitschke) VC41 6(vii, m.v.),
 13(vii, m.v.)
 0998 *Epiphyas postvittana* (Walker) VC41 6(x, m.v.), 12(x)
 1000 *Ptycholoma lecheana* (Linnaeus) VC41 10(vii)
 1010 *Ditula angustiorana* (Haworth) VC41 8(vii, m.v.)
 1011 *Pseudargyrotoza conwagana* (Fabricius) VC35 6(vi),
 VC41 6(vii, m.v.), 10(vi)
 1016 *Cnephasia longana* (Haworth) VC41 6(vii)
 1018 *C. communana* (Herrich-Schäffer) VC42 4(v)
 1020 *C. stephensiana* (Doubleday) VC41 6(vii, m.v.),
 8(vii, m.v.), 13(vii, m.v.)
 1021 *C. interjectana* (Haworth) VC41 6(vii, m.v.),
 8(vi), 13(vii)
 1022 *C. pasiunana* (Hübner) VC41 6(vii, m.v.)
 1033 *Tortrix viridana* (Linnaeus) VC41 10(vi), 11(vi)
 1036 *Acleris forsskalleana* (Linnaeus) VC41 8(vii, m.v.),
 13(vii, m.v.)
 1038 *A. laterana* (Fabricius) VC41 3(vii)
 1043 *A. aspersana* (Hübner) VC41 4(vii), 6(vii), 7(vii)
 1053 *A. hastiana* (Linnaeus) VC41 6(x)
 1062 *A. emargana* (Fabricius) VC42 1(viii)
 1067 *Celypha cespitana* (Hübner) VC41 6(vii)
 1076 *Olethreutes lacunana*
 ([Denis & Schiffermüller]) VC35 3(vi), 4(viii),
 VC41 3(vii), 6(vii), 8(vi),
 10(vi), 11(vi)
 1082 *Hedya pruniana* (Hübner) VC41 6(vii, m.v.)

| | | |
|------|---|---|
| 1092 | <i>Apotomis turbidana</i> (Hübner) | VC41 10(vi) |
| 1098 | <i>Endothenia oblongana</i> (Haworth) | VC41 6(vii) |
| 1108 | <i>Lobesia abscisana</i> (Doubleday) | VC41 13(vii, m.v.) |
| 1111 | <i>Bactra lancealana</i> (Hübner) | VC35 3(vi), 4(viii), VC41 3(vii), 8(vii) |
| 1113 | <i>Eudemis profundana</i> ([Denis & Schiffermüller]) | VC41 6(vii, m.v.), 13(vii, m.v.) |
| 1126 | <i>Ancylis badiana</i> ([Denis & Schiffermüller]) | VC41 4(vii), 6(vii), 13(vii) |
| 1134 | <i>Epinotia ramella</i> (Linnaeus) | VC42 2(viii), 3(viii) |
| 1139 | <i>E. tenerana</i> ([Denis & Schiffermüller]) | VC41 6(vii), VC42 1(viii), 2(viii) |
| 1147 | <i>E. cruciana</i> (Linnaeus) | VC41 6(vii), 9(vii) |
| 1154 | <i>E. caprana</i> (Fabricius) | VC41 6(vii-viii, 1993, Malaise) |
| 1155 | <i>E. brunnichana</i> (Linnaeus) | VC41 13(vii, m.v.) |
| 1169 | <i>Gypsonoma dealbana</i> (Frölich) | VC41 6(vii, m.v.), 13(vii, m.v.) |
| 1175 | <i>Epiblema uddmanniana</i> (Linnaeus) | VC41 6(vii) |
| 1178 | <i>E. roborana</i> ([Denis & Schiffermüller]) | VC41 6(vii, m.v.) |
| 1183 | <i>E. foenella</i> (Linnaeus) | VC41 6(vii, m.v.), 8(vii, m.v.) |
| 1184 | <i>E. scutulana</i> ([Denis & Schiffermüller]) | VC41 5(vi) |
| 1187 | <i>E. costipunctana</i> (Haworth) | VC41 8(vi) |
| 1193 | <i>Eucosma tripoliana</i> (Barrett) | VC41 4(vii) |
| 1197 | <i>E. campoliliana</i> ([Denis & Schiffermüller]) | VC41 8(vii, m.v.) |
| 1200 | <i>E. hohenwartiana</i> ([Denis & Schiffermüller]) | VC41 6(vii, m.v.) |
| 1201 | <i>E. cana</i> (Haworth) | VC41 6(vii, m.v.) |
| 1202 | <i>E. obumbratana</i> (Lienig & Zeller) | VC41 4(vii) |
| 1205 | <i>Spilonota ocellana</i> ([Denis & Schiffermüller]) | VC41 13(vii, m.v.) |
| 1219 | <i>Lathronympha strigana</i> (Fabricius) | VC41 6(vii) |
| 1241 | <i>Cydia compositella</i> (Fabricius) | VC41 3(vii), 4(vii), 6(vii) |
| 1257 | <i>C. nigricana</i> (Fabricius) | VC41 10(vi) |
| 1260 | <i>C. splendana</i> (Hübner) | VC41 8(vii, m.v.), 13(vii, m.v.) |
| 1272 | <i>C. aurana</i> (Fabricius) | VC41 4(vi), 13(vii, m.v.) |
| 1273 | <i>Dichrorampha petiverella</i> (Linnaeus) | VC41 8(vi) |
| 1281 | <i>D. simpliciana</i> (Haworth) | VC41 6(vii, m.v.) |

Alucitidae

| | | |
|------|---------------------------------------|--------------------|
| 1288 | <i>Alucita hexadactyla</i> (Linnaeus) | VC41 13(vii, m.v.) |
|------|---------------------------------------|--------------------|

Pyralidae

| | | |
|------|--|--|
| 1290 | <i>Chilo phragmitella</i> (Hübner) | VC41 6(vii) |
| 1293 | <i>Chrysoteuchia culmella</i> (Linnaeus) | VC35 1(vi), VC41 3(vii), 4(vii), 6(vii), 8(vii, m.v.), 11(vi), 13(vii, m.v.) |
| 1294 | <i>Crambus pascuella</i> (Linnaeus) | VC41 3(vii) |
| 1301 | <i>C. lathoniellus</i> (Zincken) | VC41 6(vii) |
| 1302 | <i>C. perlella</i> (Scopoli) | VC41 3(vii), 4(vii), 6(vii), 13(vii, m.v.) |
| 1303 | <i>Agriphila selasella</i> (Hübner) | VC41 4(vii) |

| | | |
|------|--|--|
| 1304 | <i>A. straminella</i> ([Denis & Schiffermüller]) | VC41 2(vii), 3(vii), 4(vii), 6(vii), 8(vii, m.v.), 9(vii), 13(vii, m.v.), VC42 3(viii) |
| 1305 | <i>A. tristella</i> ([Denis & Schiffermüller]) | VC41 4(vii), 8(vii, m.v.), 13(vii, m.v.) |
| 1309 | <i>A. geniculea</i> (Haworth) | VC35 1(viii) |
| 1311 | <i>Acentria ephemerella</i> ([Denis & Schiffermüller]) | VC41 8(vii, m.v.), 13(vii, m.v.) |
| 1334 | <i>Scoparia ambigualis</i> (Trietschke) | VC35 3(vi) |
| 1338 | <i>Dipleurina lacustrata</i> (Panzer) | VC35 2(viii), VC41 13(vii, m.v.) |
| 1336 | <i>Eudonia pallida</i> (Curtis) | VC41 6(viii) |
| 1341 | <i>E. lineola</i> (Curtis) | VC41 6vii, m.v.) |
| 1342 | <i>E. angustea</i> (Curtis) | VC35 4, VC41 4(ix, m.v.) |
| 1344 | <i>E. mercurella</i> (Linnaeus) | VC41 6(vii, m.v.), 13(vii, m.v.) |
| 1348 | <i>Parapoynx stratiotata</i> (Linnaeus) | VC41 6(vii, m.v.), 8(vii, m.v.) |
| 1350 | <i>P. stagnata</i> (Donovan) | VC41 3(vii), 6(vii, m.v.) |
| 1354 | <i>Cataclysta lemnata</i> (Linnaeus) | VC35 4(viii), VC41 6(x, m.v.) |
| 1358 | <i>Evergestis pallidata</i> (Hufnagel) | VC41 6(vii, m.v.) |
| 1361 | <i>Pyrausta aurata</i> (Scopoli) | VC41 6(vii) |
| 1365 | <i>P. cespitalis</i> ([Denis & Schiffermüller]) | VC41 4(vii), 6(vii), 7(vii) |
| 1376 | <i>Eurrhynx hortulata</i> (Linnaeus) | VC41 6(vii, m.v.) |
| 1388 | <i>Udea lutealis</i> (Hübner) | VC41 13(vii) |
| 1398 | <i>Nomophila noctuella</i> ([Denis & Schiffermüller]) | VC41 6(ix), 9(ix), 12(x), VC42 5(ix) |
| 1405 | <i>Pleuroptya ruralis</i> (Scopoli) | VC41 8(vii, m.v.), 13(vii, m.v.) |
| 1413 | <i>Hypsopygia costalis</i> (Fabricius) | VC41 8(vii, m.v.), 13(vii, m.v.) |
| 1424 | <i>Endotricha flammealis</i> ([Denis & Schiffermüller]) | VC41 13(vii, m.v.) |
| 1438 | <i>Eurhodope suavella</i> (Zincken) | VC41 13(vii, m.v.) |
| 1452 | <i>Phycita roborella</i> ([Denis & Schiffermüller]) | VC41 13(vii, m.v.) |
| 1470 | <i>Euzophera pinguis</i> (Haworth) | VC41 8(vii, m.v.), 13(vii, m.v.) |

Pterophoridae

| | | |
|------|--|--|
| 1495 | <i>Marasmarcha lunaedactyla</i> (Haworth) | VC41 6(vii, m.v.), 9(vii) |
| 1504 | <i>Platyptilia pallidactyla</i> (Haworth) | VC41 13(vii) |
| 1509 | <i>Stenoptilia pterodactyla</i> (Linnaeus) | VC41 6(vii, m.v.) |
| 1513 | <i>Pterophorus pentadactyla</i> (Linnaeus) | VC41 13(vii, m.v.) |
| 1524 | <i>Emmelina monodactyla</i> (Linnaeus) | VC41 3(xi), 6(vi-vii,, Malaise, 1993) |

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The Pale Shoulder *Acontia lucida* Hufn. (Noctuidae) and the Small Eggar *Eriogaster lanestris* L. (Lasiocampidae) in Hampshire

I was delighted to find a larval web of the Small Eggar *Eriogaster lanestris* on blackthorn *Prunus spinosa* on the Hampshire/ Dorset border, in VC 11, on 8 July 1996 in an area where the species was rediscovered in 1993 (B. Goater, *pers. comm.*). A few weeks later, on 19 August 1996, a fine specimen of the uncommon immigrant Pale Shoulder *Acontia lucida* was taken at m.v. light by Andrew Page at his home in Linford, also in Hampshire. This is the first record of this species for Hampshire and only the fifth British example for the present century.– R. COOK, 11 Greensome Drive, Ferndown, Dorset BH22 8BE.

Hazards of butterfly collecting – vanishing *Papilio zalmoxis* Hewitson, Oban Hills, Nigeria, March 1995

Papilio zalmoxis Hewitson is one of the largest butterflies in the world, and after *P. antimachus* Drury the second-largest in Africa (its wing contour covers these pages). I had never caught either until I visited the Oban Hills National Park near Calabar in the Cross River National Park in Nigeria. On our way to Old Ekuri we crossed a river. I always stop to check whether something interesting might be drinking along the banks. Here was a fresh male *P. zalmoxis*. The sight of this magnificent insect, twice as large as any other local butterfly, reduced even this hardened specialist to a state of adrenaline-bolstered jelly. I missed it in the first try, but – glory be – it came back, and I got it with a two-handed backstroke. More luck than I deserved! The adrenaline vanished, only the jelly remained! It took me several minutes to fully recover.

In the rainforest it is often difficult to dry the butterflies collected, which is important since they may otherwise rot or get mouldy. That evening I carefully hung the day's butterflies to dry on a washing-line under the ceiling of the room that we had been allocated by the chief, in a open box, inside a spare net-bag, suspended by a pipe-cleaner. That should keep them clear of marauding ants. During the night, mice managed to climb this structure, chew their way through the butterfly net, and eat a total of eight butterflies – including my first and only *P. zalmoxis* as the most important casualty. Only a sliver of blue wing remained. This seemed to indicate that *P. zalmoxis* is not a toxic species, though its bright-yellow abdomen might suggest this. Rothschild & Reichstein (*Antenna*, 1994, **18**(4): 207) found that its larger cousin, *P. antimachus* has sufficient toxins to kill several cats. But, of course, I do not know what subsequently happened to the mice in question! I caught another *P. zalmoxis* the following day, and devised a safer drying apparatus. I also managed to see the mice – walnut-sized little creatures that could hardly have weighed more than the butterflies they ate.

I hired a young man to keep watch on the *P. zalmoxis* situation at the second river – at the princely sum of £1.30 a day, with a promise of double that for success – but for the next four days none turned up, and neither did *P. antimachus*. These two giants of the butterfly world tend to keep high in the canopy, but the males are addicted to drinking from river-banks. I guess that at least 90% of all specimens in collections were collected at water, which accounts also for the fact that there are only one or two females for every hundred males. There is no doubt that they are both extremely scarce in West Africa, though widely distributed where primary forest remains.

During several years as District Commissioner in the 1960s at Ikom, which covers what is now the national park, my good friend, Bob St. Leger saw only a few of either giants, though *P. zalmoxis* was certainly the commoner of the two. A few days before his much too early death in

December 1994 he told me that he had seen *P. antimachus* only rarely, and caught only one – under circumstances worth recording. He was driving back from Calabar to Ikom and stopped for mechanical reasons close to a bit of surviving primary forest. While he was tinkering with the car, a huge and perfect *P. antimachus* swooped down to investigate – quite possibly attracted by the impression of water given by the chrome bumpers of the car. With the unflappable calm born of a long career in the colonial service, he did the right thing, on the spot – he peed, just in front of the bumper. Four minutes later, the prize was in his net. I assume the car was eventually fixed as well!

One day I shall also bag my first *P. antimachus*. There are 3700 butterfly species in Africa, and 1400 of these are in West Africa. I am supposedly studying all of these in a scientific manner. Species new to science turn up at a low but steady rate. No foray into West Africa fails to turn up interesting new ecological and biogeographical information. So a single species, the distribution and ecology of which is well known and large as it is, should exert no particular attention. Sorry too much! Each time I enter one of the forests where I might encounter *P. antimachus*, that is foremost in my mind. Irrational? Yes! Do I mind? Not in the least!– TORBEN B. LARSEN, 358 Coldharbour Lane, London SW9 8PL.

***Agonopteryx curvipunctosa* (Haw.) (*zephyrella* (Hb.))
(Lep.: Oecophoridae) in Somerset, 1995**

On the night of 30 March/1 April 1995 my garden m.v. trap at Berrow, Somerset (VC 6) produced two Common Quakers *Orthosia cerasi* Fabr., two Hebrew Characters *O. gothica* D. & S., one Early Grey *Xylocampa areola* Esp., one *Epiphyas postvittana* Walker and an *Agonopteryx* species which was unfamiliar to me.

After consulting the *Illustrated Papers on British Microlepidoptera* (BENHS), I confidently pronounced it to be *Agonopteryx curvipunctosa*. As this was a new species for me I photographed it and decided to preserve it for future reference.

I thought little more of it until I sent my new records of micromoths to Col A.M. Emmet. His letter made me realise the significance of my find, provided I had made the correct identification. He suggested that Dr J.R. Langmaid would be interested in seeing the specimen or the photograph.

I eventually forwarded the specimen to Dr D.J.L. Agassiz who kindly forwarded it to Dr Langmaid who has confirmed my identification.

This appears to be the first recorded in Britain (excluding the Channel Islands) since Col Emmet found a specimen at Dartford, Kent in 1965.

I wish to thank the above-mentioned for all their help and guidance.– BRIAN E. SLADE, 40 Church House Road, Berrow, Burnham-on-Sea, Somerset TA8 2NQ.

**Large Heath Butterfly *Coenonympha tullia* Müll. (Lep.: Satyridae):
Appeal for information**

I am carrying out a study on the decline of the Large Heath Butterfly *C. tullia* Müller, in England. Its present status is far from certain, but it is known that many sites have been lost to agriculture, afforestation, draining and peat extraction, during the last decade alone.

I am seeking data regarding sites, no matter how well known, number of specimens seen, site area, site altitude, any threat either direct or indirect which may affect any colony. Information from data labels in collections, photographic or notebook records, in fact any data from any date period whatsoever, would be most welcome.

I intend to contact museums holding collections of this species, to extract any data which may be available. This will give me historical records, but current information is in very short supply. All information will be treated in confidence where this is requested.

At the present time I would estimate that Northumberland has 75% of all the colonies in England. I have just completed a second year of a five-year study of this species in this county, and I have located it on 116 separate sites. I anticipate that there are at least another 100 colonies awaiting detection. The rest of England is less fortunate, and it may not be long before many of the more southern sites lose their resident populations.

Should you have any queries or reservations regarding my appeal for information, please do not hesitate to contact me.— HARRY T. EALES, 11 Ennerdale Terrace, Low Westwood, Derwentside, Co. Durham NE17 7PN.

On the name *Typhoeus* (Col.: Geotrupidae)

This familiar name having given rise to some confusion and vagaries of spelling, a few words on the subject may not be out of place. Firstly, the Linnaean version (1758) is fortunately correct and stands today as the trivial name of the species. Not so that of Leach (1815) who made the name generic while perversely altering the *o* to an *a* without the least need, in consequence of which the species is saddled with the rather awkward binomen *Typhaeus typhoeus* (L.). Leach's action here is a good example of the fallacy remarked upon earlier by me (*Ent. Rec.* **108**: 38) of supposing that the diphthongs *ae*, *oe*, are freely interchangeable.

However, the matter is not quite as simple as that, for the actual diphthong in *Typhoeus* is not the *oe* but the *eu*, which happens here to be preceded by the letter *omega*, or long "o". In Greek mythology it was the name of the giant whom Zeus struck with lightning and (for good measure) buried under Mount Etna, and literally means "the smoker". The *-eus* is the same as that in Zeus, Odysseus, Perseus, Theseus etc.; correctly, therefore, *Typhoeus* rhymes with "no use" and not with "see us".— A.A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

SOME NOTES ON THE LIFE HISTORY OF *CRYPTOCEPHALUS* *6-PUNCTATUS* L. (COL.: CHRYSOMELIDAE)

JOHN OWEN

8 Kingsdown Road, Epsom, Surrey KT17 3PU.

ON A JOINT VISIT to a site near Stockbridge, Hampshire on 25.vi.93, my friend Ian Menzies beat from hazel *Corylus avellana* a female *Cryptocephalus sexpunctatus* which he generously presented to me. During the next week or so she laid a number of eggs from which larvae, pupae and, ultimately, further adults were obtained. These notes present observations made in rearing the species through two generations, a process which occupied three years. As in the case of other members of the genus *Cryptocephalus*, complete development of the beetle from egg to adult takes place within a capsule formed from faecal material and enlarged as growth occurs. Rearing the species in captivity revealed the relation of this encapsulation to development and demonstrated other aspects of its life history not easily observed in the wild.

Eggs and egg-laying

The females were kept in glass jars covered with netting and given hazel leaves which they nibbled almost continuously. The captured specimen had apparently mated before capture for she was laying eggs which proved fertile within a few days of capture. Mating was not observed with the reared specimens but they started egg-laying within a few days of emerging.

While laying eggs, the beetle hangs from a leaf or stem, producing an egg at intervals and holding it with her hind tarsi against an excavation on the apical sternites. She then extrudes faecal material which she moulds around the egg using her hind tarsi forming a strongly carinated, mildly elongated capsule (Plate A, Fig. 1). The encapsulated egg is then dropped and the process continued with the next egg.

The captured female laid only about 20 eggs in captivity but she may have laid many more in the wild before capture. Some of the eggs were without faecal cover, possibly because one of her hind legs was damaged. These uncoated eggs produced living larvae but the latter did not survive. The two first-generation females laid about 160 eggs between them during a period of about two weeks. Unfortunately, most of these eggs were accidentally discarded but about 30 were saved.

Larvae

The eggs hatched in about three weeks. the newly hatched larvae remained within the faecal coating of the egg which formed the start of the larval capsule. They were supplied with hazel leaves in which they ate small holes. When they were about ten days old, they stopped crawling about and eating

for about a week. Then head cases appeared in the container indicating that they had moulted. They then started eating again. Eight weeks later they again stopped eating and crawling about. A set of larger head cases appeared in the container a week later and the larvae started feeding again. Increase in capsule size involved the larva making a longitudinal slit in the wall of the capsule, expanding it a little and then plugging the gap with more faecal material. For a day or so afterwards, the position of the filled gap showed as a lighter streak along the capsule. As capsules grew in size, weak longitudinal ridges developed, possibly related to the process of their expansion. By the time the larvae had become full-grown, the capsules measured 7-8mm in length and 3.5-4mm in diameter (Plate A, Fig. 2).

Larvae from the captured female continued to eat until the end of October 1993 but then stopped eating and became more or less inactive. Up until that time, they had been kept in containers indoors but they were then put into winter quarters outside. The latter consisted of squat jars with perforated screw-cap lids, containing a layer of moistened sand 2-3cm deep and a few withered hazel leaves. The containers were placed in a cold part of the garden with a raised plastic cover over the containers to keep out the rain. The larvae spent most the winter within the curled up leaves. As spring and summer ensued, they gradually became active, nibbling first hazel catkins, then withered hazel leaves and finally fresh hazel leaves.

The larvae continued feeding throughout the summer of 1994. By October, however, they had become much less active and were put outside into the same winter quarters as they had had the previous winter. Most of the time throughout the winter they lay motionless within curled up withered leaves.

In early spring 1995, they were seen to have moved on occasions but not to eat. Towards the end of March, they took up positions in curled up,

PLATE B: opposite

Fig.1. Eggs of *C. sexpunctatus* showing a coating of faeces from the female. sculpted into carinae by her hind tarsi.

The encapsulated eggs measure approximately 0.12 x 0.08mm.

Fig.2. Larva, showing head and front legs extruded from its capsule. When the head and legs are withdrawn into the capsule, the flattened front of the head seals the entrance. The well-developed front legs provide sufficient traction to make the encapsulated larva quite mobile on more or less level surfaces. The full-grown capsules measure 7-8mm in length and 3.5- 4.0mm in diameter.

Fig.3. Empty pupal chamber. Before pupating, the larva has attached the open end of the capsule to a dried leaf with a few silk threads and then sealed the opening. The adult has escaped from the opposite end of the capsule by cutting round to form a hinged cap.

Fig.4. Adult female *C. sexpunctatus*: length of females 5.5-6.5mm; males 5.0-6.0mm.



Fig. 2

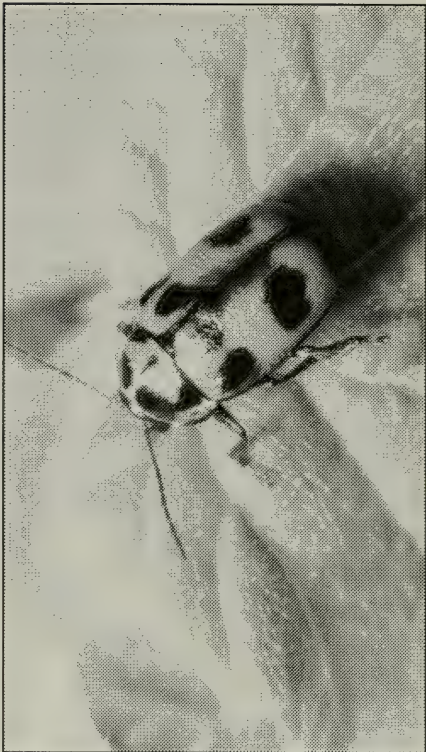


Fig. 4

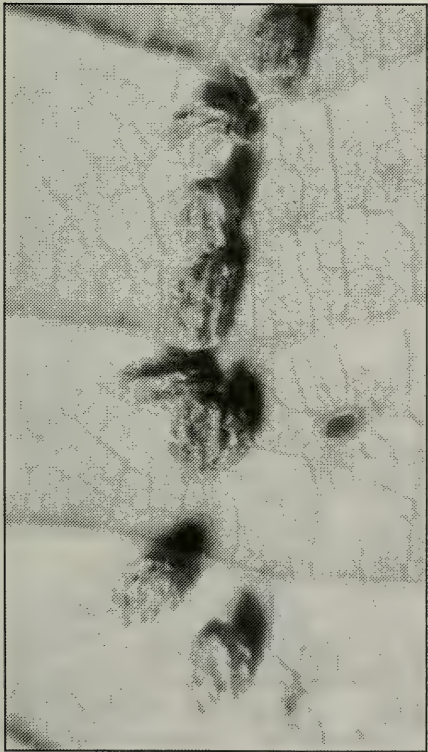


Fig. 1



Fig. 3

withered hazel leaves and fastened their capsules to the leaves with short silk threads. Afterwards, the mouth of the capsule was sealed and it was presumed that pupation occurred shortly after this. A capsule cut open at this stage showed a pupa with its head pointing away from the attached end. The containers were left outside in a position where they were warmed by the sun until the adults emerged.

Larvae from the first captive generation behaved similarly but took only one summer to become full-grown. They were put into winter quarters at the beginning of November 1995. As with the first generation larvae, they remained inactive until March of the following year when they fastened their capsules to withered leaves and pupated.

Adults

Adults emerged from the capsule by cutting round what had been the closed end of the larval capsule to make a hinged cap (Plate A, Fig. 3). In 1995, four adults of the first captive generation (two males, followed by two females) emerged at the end of April. These were obtained from seven larvae put outside to overwinter in November the previous year. One of the males died a few days after emerging. The other and the females lived for several weeks. A photograph of an adult female is shown in Plate A, Fig. 4.

In 1996, twelve adults of the second captive generation (three males and nine females) emerged during the last week of April and the first two weeks of May. These were the product of fifteen larvae put outside in October 1995. As with the previous generation, the males emerged first. For unknown reasons, all three males, together with the first female to appear, died within a few days of emerging. The remaining eight, however, appeared healthy and lived in a large glass container for several weeks, nibbling fresh hazel leaves. Presumably one of the surviving females had mated for only a few uncoated eggs were laid and these proved infertile bringing the colony to an unfortunate end.

A summary of the breeding progress in the two generations is presented in Table 1.

Discussion

The development of the larvae of *Cryptocephalus* and related species in capsules has long been known though the exact nature of the capsule was not appreciated initially. Rye (1866) states that early observers thought that the capsules were formed of earth but that further studies had shown that they comprised faecal material. This study confirms this for *sexpunctatus*. Hinton (1944) states that the outline and sculpture of the egg capsules of different species are sufficiently characteristic in a number of British species to allow identification of the species but he does not mention whether this applies to the eggs of *sexpunctatus*.

Most of what was observed in this study no doubt reflects the life history of the species in the wild. Two questions, however, remain unanswered. The first concerns the duration of the life cycle. The first captive generation took two years to develop while the second took only one year (see Table). This was probably due to larvae of the second generation having a longer growing season the year they hatched because they came from eggs laid towards the end of May rather than from eggs laid at the end of June as in the case of the first set of larvae.

Table 1. Timetable of development of *Cryptocephalus sexpunctatus* in captivity.

| Stage | first captive generation | second captive generation |
|-------------------|-----------------------------|--------------------------------|
| female(s) laying | 1st week July 1993* | May to June 1995 |
| 1st instar larvae | 20 at start of July 1993 | 30 at end of May 1995# |
| 2nd instar larvae | 14 at end of July 1993 | 20 at end of June 1995 |
| 3rd instar larvae | 10 at end of September 1993 | 16 at middle of August 1995 |
| full-grown larvae | 6 at end of October 1994 | 15 at end of October 1995 |
| anchored capsules | 6 at end of March 1995 | 15 by first week of April 1996 |
| adults | 2 ♂ & 2 ♀ April/May 1995 | 3 ♂ & 9 ♀ May 1996 |

* this was the female captured in the wild.

about 160 eggs were laid but most were accidentally discarded.

The second unanswered question is what serves as larval foodplant in the wild. In captivity, larvae were supplied with fresh hazel leaves simply because the captured female was found on hazel. They developed well on this diet but it seems very unlikely that larvae in the wild could reach fresh hazel leaves. The larvae are able to crawl about objects lying on the surface of the ground in spite of the impediment of a capsule but their legs appear designed for traction and, in captivity at least, the larvae showed no evidence that they could climb up a hazel tree. Overwintering larvae were seen occasionally to nibble at withered hazel leaves such as are likely to be available to a larva on the ground on a year round basis but these would have a much lower nutritional value than green hazel leaves. Fallen hazel catkins with a higher nutritional value would be available in the spring but only for a short period. It seems likely, accordingly, that the bulk of the larval nourishment in the wild comes from other sources such as low growing plants. Other trees and bushes on which adults have been found include aspen *Populus tremula* (Ashe, 1921; Cox, 1948), birch *Betula* sp. (Fowler, 1890), crack willow *Salix fragilis* (Cox, 1948), hawthorn *Crataegus* sp. and

oak *Quercus* sp. (Koch, 1992) but with none of these are fresh leaves likely to be any more accessible to larvae than those of hazel. Moreover, if the larvae of this species did climb trees to eat fresh leaves, it might be expected that they would have been encountered by entomologists beating the trees for one reason or another but this does not seem to have been recorded. The same remark applies to the larvae of other relatively common *Cryptocephalus* species, such as *labiatus* (Linnaeus), *parvulus* Müller or *pusillus* Fabricius, whose adults occur on the same trees and shrubs.

In the two generations studied, one of two adult males in the first generation died within days of emerging and all three males of the second generation suffered the same fate. The reason for this selective mortality is not known. In both generations, females treated in the same way as the males, lived in captivity for several weeks. It is conceivable that lack of a normal dietary factor (? low growing plants) may have been responsible. Alternatively, the relatively rich diet of fresh hazel leaves may have interfered in some way with proper development. Clearly further studies are desirable and will be attempted but these may well take a few years to perform.

Acknowledgements

I am much indebted to Dr I.S. Menzies for presenting me with the only specimen we encountered on our visit to Stockbridge and for looking after the second generation larvae while I was on holiday. I am indebted also to Mr D.J.M. Owen for a loan of the equipment used in photographing the various stages of the beetle.

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AND JOURNAL OF VARIATION

(Founded by J.W. TUTT on 15th April 1890)

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**EPIONE PARALELLARIA D. & S. (LEP.: GEOMETRIDAE) AND ITS
ASSOCIATION WITH ASPEN *POPULUS TREMULA* IN THE
SCOTTISH HIGHLANDS**

¹ROY LEVERTON, ²MARK R. YOUNG AND ³DAVID A. BARBOUR

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THE DARK BORDERED BEAUTY *Epione paralellaria* is a very local species in Britain. Shirt (1987) accorded it RDB 3 status: "Rare". At present, there are post-1980 records from only four 10km squares. Waring (*in press*) gives details of its current distribution, and revises its status to RDB 2: "Vulnerable". It seems to be confined to a handful of widely separated sites in the north of England and in Scotland, most of which have long been known, where it forms discrete colonies. The few individuals reported from southern England, if genuine, are thought to be migrants or strays. Presumably the species has very exacting requirements, or it is a poor coloniser; perhaps a combination of both factors applies.

The historical background

The named localities given in South (1907) comprise two mosses and two bogs, so the moth has always been linked with damp habitats. The main foodplant at its sites in the north of England, and in southern Scotland too, is considered to be dwarf willow *Salix repens*. Hewett (in Tutt, 1902) described how larvae could be obtained at the Yorkshire sites by sweeping dwarf willow in June, and the females found resting on that plant in July. Sadler (1975) describes the finding of 13 small larvae on dwarf willow in June 1974 at a site in southern Scotland (presumably Adderstonlee Moss, Roxburghshire). More recently, M. Britton has found larvae at Strensall Common, Yorkshire, only on *S. repens*, and never on any other *Salix* species or on the small birches *Betula* which are also present (H.E. Beaumont, *in litt.*), although these are cited by most authors as alternatives, or as occasionally used (eg. Emmet & Heath, 1992).

The history of *E. paralellaria* in the Scottish Highlands is not clear-cut. South (1907), quoting Salvage, describes the moth as widely distributed in Sutherlandshire, but this is now thought unreliable. The first incontrovertible record of its occurrence in the Highlands came only in 1953, when E.C. Pelham-Clinton took seven males at light at Speybridge, and suggested that they were associated there with aspen *Populus tremula*, not dwarf willow. This site is usually given as being in Inverness-shire, but is actually in Moray in terms of the Watsonian vice-county boundaries. (How many entomologists realise that the village of Aviemore itself is in VC95, Moray, and not VC 96, East Inverness-shire?)

Then, in or around 1968, W. McWilliam discovered a colony of *E. paralellaria* near Balmoral on Deeside, but the find was not published. Following his directions, R.M. Palmer and MRY confirmed the moth's presence in 1975, and added it to the Aberdeenshire list (Palmer & Young, 1977). Intriguingly, while transcribing data labels from a collection (now destroyed) made by a Mr Catto in Aberdeenshire around the end of the 19th Century, DAB found two undated specimens of *E. paralellaria* labelled "B-mar" – almost certainly Braemar, and conceivably the same Balmoral site. If so, its existence on Deeside was not known to the Aberdeenshire recorders of the time such as Reid (1893) or later collectors such as Duncan in the 1920s-1940s, who collected extensively in the Braemar area.

Ecology of the Highlands sites

The moth is apparently confined to a relatively small area at the Balmoral site, which superficially seems no different from many other places on Deeside, or elsewhere in the Scottish Highlands. It is sheltered, and runs alongside a burn, but is not especially wet, and *S. repens* is almost certainly absent. Instead, *E. paralellaria* is associated with aspen. In particular, it is found amongst small and stunted aspen bushes about one to two metres high, arising from suckering, and low growth springing up where taller trees have been felled.

A visit was made to this colony by MRY and RL in the early evening of 30.vii.1994. The weather was still, overcast and warm. *E. paralellaria* was the most numerous moth seen. Males were easily disturbed from the low aspens and surrounding herbage such as bracken. The female is said to be sluggish, and rarely found (Hewitt, *loc. cit.*; Skinner, 1984), but at least six were noted, two of which were resting low down on fenceposts, and others sitting fairly openly in the vegetation. As the colony was clearly having a good year, one female was retained for eggs by MRY, with the aim of discovering more about the species' requirements in the early stages.

The Speybridge area is also characterised by the presence of aspen, but we could not trace any records of *E. paralellaria* there subsequent to its 1953 discovery. Indeed, there appears to be only one further record for Speyside: a casual single specimen in 1975 at Aviemore (Wild, 1975). Accordingly, an attempt to refind the moth at Speybridge was made in 1994 by DAB and Dr Paul Waring. This was unsuccessful, and it was noted that, although aspen was still present, the trees were now mostly tall and mature. Further searches by DAB proved equally fruitless, until he and RL found three (possibly four) males in aspen woodland on 11.viii.1996. The first was resting low down on an aspen bole, and the others disturbed from foliage. Significantly, the moths were found only in a small part of the woodland, where the aspens were producing suckers, even though these were less than 0.5 metres tall. As with the Balmoral site, the habitat was sheltered and near a stream, but not wet; *S. repens* was apparently absent.

Captive breeding

Eleven of the eggs laid by the Balmoral female were passed to RL, with about two dozen kept by MRY. They were overwintered in unheated outbuildings. Those held by RL did not begin to hatch until 28.v.1995 – a wise precaution this far north, where cold springs often delay leafbreak. Formal descriptions of the larval instars are given later.

Young leaves of aspen were provided for the newly hatched larvae, this being the presumed foodplant at the Balmoral site. They were eaten readily. Aspen being in short supply, RL also provided tender leaves of birch, and of willows *Salix aurita* and *S. cinerea*, but all were untouched. Larvae reared by MRY even refused Italian Poplar *P. serotina*. Later, MRY had cause to transport his larvae to an area of Yorkshire where aspen was unavailable, but foresaw no problem because *Salix repens* was common there. Surprisingly, the Balmoral larvae refused to eat this, even when no other food was available and they were in danger of starving. Supplies of aspen had to be obtained urgently by post, whereupon the larvae resumed feeding. RL also offered *S. repens* to his larvae with the same result, except that a small part of one leaf was eaten initially, but none was touched after that.

The ten larvae reared by RL (one having died from injury soon after hatching) were closely observed throughout their development. Some interesting behaviour was noted. During the first three instars, but not afterwards, the larvae spent most of their time when not feeding suspended from the twigs of their foodplant by a silk thread. The length of this thread was fairly constant, being roughly one and a half times that of the larva. At any one observation, an average of eight of the ten larvae would be suspended in this way. Caterpillars of many species will drop and hang by a thread if disturbed, so great care was taken to establish that this was not happening with the *E. parallellaria* larvae, and they were not reacting to any vibration or the observer's shadow. This was ruled out. On the contrary: any disturbance had the opposite effect, causing the larvae to climb rapidly up the silk and regain the twig. Piles of frass clustered immediately below each larva proved they had been hanging in the same place for some time. They fed mainly at night.

Occasionally, a larva was seen hanging head-downwards from its silk. Such larvae appeared ready to moult. Eventually, ecdysis from the second to the third instar, while the larva was still suspended, was observed. The old skin split dorsally behind the head in the usual way, and rhythmic movements caused it to concertina upwards towards the tail. Just as it seemed that the larva must surely fall, being almost free of the old skin, it looped up to grasp the thread of silk with its thoracic legs. Next, it seized the old skin in its jaws, pulling it off the anal claspers. Still holding the bundle of old skin, it climbed the silk back onto the twig, where the old skin was deposited. Whether this is the normal method of ecdysis in the early instars

is unknown, but other larvae were seen hanging head-downwards without the full process being observed.

The captive larvae ate relatively sparingly, yet grew quickly. They were ready to pupate in a little over three weeks. The rather slight cocoons of brownish silk were spun in surface debris or between dead leaves. Moths emerged about three weeks after pupation, always at night. They were normal in size and appearance.

Not being able to release them at the original site, RL placed five females and two males in a large container. They were supplied with aspen foliage and twigs, and fed with a sponge soaked in sugar solution. Mating was observed on several occasions. The females all lived 14-15 days, and the males 16 and 17 days. At first it seemed that few eggs had been laid, but when the container was emptied, it was found that nearly all had been laid on the twigs at the bottom of the pile, and in the darkest corners, with none on the exposed, uppermost twigs. Shriveled fern leaves had also been used. If repeated in the wild, such behaviour would suggest that eggs are laid amongst ground litter, and perhaps dead bracken, rather than on the living twigs of the foodplant. On two occasions in autumn, in 1990 and 1994, MRY had searched the aspen bushes at the Balmoral site for eggs of *E. paralellaria* with success, even though he was familiar with the characteristic colour and appearance of the eggs by the time of the second visit.

The five dead females were dissected, and found to be completely spent. Two contained no unlaidd eggs, two contained a single egg, and the fifth had two unlaidd eggs. Those which had been laid were carefully counted, giving a total of 598 – a rough average of 120 eggs per female.

In spite of the imbalance of the sexes, only about 4% of the eggs were obviously infertile from their appearance when checked the following April. The eggs were later taken back to the original site by DAB.

The finding of larvae in the wild

The insistence on aspen by the captive larvae lent weight to the assumption that this was the foodplant at the Balmoral site. To confirm it, DAB beat low aspens there on 1.vii.1995, and eventually found three *E. paralellaria* larvae, each in a different instar from third to last.

Discussion

In the Scottish Highlands, *E. paralellaria* has different foodplant from that used at its other British colonies, and occupies a different habitat. Although *Salix repens* is widespread in the Highlands, it seems not to be used there, and captive larvae refused to eat it even when starving. Instead, the moth requires aspen thickets where the growth is low and scrubby, as occurs where the trees are producing suckers. Possibly the need for low sheltered bushes results from the larva's habit, in the early instars, of hanging from a

silk thread for long intervals when not feeding. This may help it to avoid parasites or predators. Such a tactic would be impossible on tall, windswept trees. Also, if the eggs are laid on ground debris, as is suggested by the behaviour of captive females and our failure to find eggs on living aspen twigs in the wild, the newly-hatched larvae may have a better chance of reaching the leaves of their foodplant in low, dense growth, rather than in tall, more widely-spaced woodland.

Both Deeside and Speyside have been relatively well-worked since Victorian times, yet this distinctive and attractive moth was presumably overlooked there until comparatively recently. Even after its discovery at Speybridge in 1953, there were no further records from that area for over 40 years, and it took several expeditions by observers familiar with the species at its Balmoral site before the moth was refound.

Many of the sexually dimorphic Ennominae with fully-winged females are at least partially diurnal, and this behaviour is well-documented for *E. paralellaria* by Hewett (*loc. cit.*), who describes an early morning flight by the males between 6am and 9am. Thus light trapping may not be particularly effective for this species, given also that the females are sluggish, compared with daytime searching of likely habitat. We consider it probable that further colonies of *E. paralellaria* will be discovered in the Highlands once the connection with aspen, rather than dwarf willow, is more widely recognised. In flight by day, slightly worn males can resemble the ubiquitous Yellow Shell, *Camptogramma bilineata* L. so it is well worth investigating any small yellow geometer seen near aspen in Scotland, especially between late July and mid-August.

Descriptions of the early stages

Eggs

Of the usual geometrid lozenge shape, pale cream, soon changing to a deep, bright pinkish orange. In captivity, laid on dead twigs in small, irregular clusters, resembling slightly the coral spot fungus *Nectria cinnabarina*.

Overwintering; shortly before hatching becoming purplish-grey.

Larva

Newly hatched, before feeding: long and slender, strikingly patterned for a first instar larva, being dirty white, with a broad, dark grey-brown dorsal stripe and similar, slightly less broad, ventral stripe. Head rounded, pale brownish-yellow. The pattern becomes more diffuse as the larva grows, the sides becoming pale greenish-white and the dorsal and ventral areas dark greenish-grey.

Second and third instars: Contrast between dark dorsal and ventral stripes and pale sides now less sharp, due to each having fine, wavy, longitudinal striations of the opposite colour. Spiracles and warts small and black,

inconspicuous. The most noticeable feature is a comma-shaped mark, intensely brownish-black, on each side of the second abdominal segment. It is set in a slight depression, and roofed along its convex upper edge by a ridge or fold of skin, displacing the spiracles upwards. Because of these structural features, RL considers it might be some sort of gland, perhaps with a defensive function. Head, pale brown with dark brown spots.

The bicoloured, striped pattern of the first three instars corresponds with the stage when the larva hangs suspended from a silk thread when not feeding.

Fourth instar: More twig-like; still with dorsal and ventral areas darker than the sides, but with a less clear-cut division. The sunken mark on the sides of the second abdominal segment is now less conspicuous due to additional dark marking dorsally on that segment.

Fifth (final) instar: Long and slender, tapering evenly from tail to head, apart from a knuckle-like bulge on the second abdominal segment, emphasised by black dorsal and lateral marking. Dorsal surface grey-brown, tinged violet, with fine, wavy, longitudinal striations both paler and darker. A raised white dot, partially outlined with black, subdorsally on each segment, and several smaller black warts each bearing a short fine bristle. Sides, dull purplish red; spiracles small and black, indistinctly ringed whitish. Subspiracular line not sharply demarcated, pinkish-white blotched with pale yellow, continuing down the side of the proleg on abdominal segment 6, and edged there with black. Ventral surface pale grey, tinged yellow and pink, and striated paler and darker; a black oblong or X-shaped blotch, increasingly heavy, on abdominal segments 3-6. Thoracic legs whitish, marked with black. Head sloping, small and rounded, pale greyish, heavily spotted dark brown, with pale mark across frons. Full-grown length c.26mm.

Although some of the colours themselves are bright, they merge and blend to give the larva a procryptic, twig-like appearance. It rests at an angle to the stem of its foodplant, with the abdomen straight, but the thoracic segments and head gently curved backwards away from the stem. Each pair of thoracic legs then forms a separate tooth in a serrated profile.

Acknowledgements

We thank Paul Waring for allowing us to see the provisional map and text for this species from his forthcoming atlas of the scarcer British macro-moths. H.E. Beaumont kindly provided information about the moth at its Strensall Common site.

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Notable ant records from Glen Strathfarrar, East Inverness

Glen Strathfarrar National Nature Reserve (2189 hectares) occupies the lower part of Glen Strathfarrar, East Inverness (VC 96). The heavily glaciated valley has steep slopes where relatively extensive tracts of Caledonian pine forest, and birch woodlands have survived. In the valley bottom, the tree cover, in combination with free draining fluvio-glacial deposits, have created ideal conditions for a number of ant species.

Mixed nests of *Formica lemani* and *Formica sanguinea* were seen in many areas where there was sandy and stony ground adjacent to trees. Glen Strathfarrar provides the beginnings of the link between the populations of *F. sanguinea* to the north at Migdale Wood (Hughes, 1994), and those in Glen Affric to the south. It is possible that *F. sanguinea* survives in other fragments of ancient birchwoods in the Glens of East Inverness and East Ross although I am yet to find any colonies. *Myrmica sabuleti*, *M. lobicornis*, and *Lasius flavus*, *Lasius niger* agg. were all frequent amongst similar habitat along the valley bottom.

In addition, the woodlands along the first six miles of the Glen support a thriving population of *F. aquilonia* which, with the woodland management initiatives developed by Scottish Natural Heritage, are set to fare well in the coming decades.

— JONATHAN HUGHES, 11a King St, Embo, Sutherland IV25 3PU.

Pontia daplidice (Lep.: Pieridae) in Kent, *Argynnis lathonia* (Lep.: Nymphalidae) in Gloucestershire, and some other 1996 migrant records

Ever since childhood I have been scanning, without success, *Buddleia* bushes for something a bit rarer than the usual vanessid or pierid. It is therefore with a slight degree of chagrin that I have to report that it was my father, Dr Albert Woiwod, rather than myself, who was fortunate enough to see a Bath White *Pontia daplidice* L. in such circumstances. It was in his

garden which is on the shingle at Lade, Lydd-on-Sea, Kent (OS grid reference TR 084205), on 8 August 1996. Although he is not an expert he knew that it was something different and thinking it might be a Marbled White, *Melanargia galathea* L., had time to get a book out and compare the individual directly with the illustrations to confirm identification. In a similar way, I was discussing the regular occurrence this year of *Colias croceus* Geoffr. on the fields where I work at Harpenden, Hertfordshire when a colleague, Dr Steve Foster, casually announced that he had seen a Queen of Spain Fritillary *Argynnis lathonia* L. the previous weekend whilst walking in the Cotswolds. With his agreement I am reporting the observation here. It was at Shenberrow Hill, near Stanton, Gloucestershire (SP 075339) on 17 August. (Yes, we have already had the Dr Foster went to Gloucester joke!) Steve is now a professional entomologist working on aphids but he collected butterflies as a boy and is certain that his fleeting glimpse, as the species alighted briefly, was of this species. By comparison with the above, and in this exceptional year for migrant Lepidoptera, my personal records so far are somewhat meagre. An *Heliothis peltigera* D. & S. nectaring on *Centaurea* in Potton Wood, Bedfordshire on 21 August (TL 55505) and a further one in my Rothamsted Insect Survey light trap on 1 September (RIS site 336 Cockayne Hatley (TL 253494)). Also in my trap, *Spodoptera exigua* Hb. between 17-18 August was the first confirmed record for this species in Bedfordshire. All four of the common migrant species *Autographa gamma* L., *Udea ferrugalis* Hb., *Nomophila noctuella* D. & S. and *Plutella xylostella* L. have occurred in exceptional numbers, higher than anything recorded in the last twenty years at this site. Finally, a *Macroglossum stellatarum* L. resting on The Cutters Inn, Ely, Cambridgeshire (TL 543798) on 25 August.— IAN WOIWOD, South Lodge, Cockayne Hatley, Sandy, Bedfordshire SG19 2EA.

**Southern Chestnut *Agrochola haematidea* D.&S. (Lep.: Noctuidae)
recently discovered in Hampshire**

Whilst reviewing the autumn species at m.v. light in a grassy field adjoining oak woodland on 8.x.1996, in the company of Don Humphrey and Andrew Page, I was amazed to see three specimens of *Agrochola haematidea*. They came in at about 7pm in characteristic buzzing flight. We were about 200 metres from the nearest heathland. Mercury-vapour light trapping on this heathland on 12.x.1996, produced twenty specimens of the moth and, as it was seen in several other spots, it seems likely that it is established over quite a wide area here.

The exact locality is being withheld for the time being; it is hoped however, that this short note will stimulate other lepidopterists to look for the moth in new areas in southern England.— R.R. COOK, 11 Greensome Drive, Ferndown, Dorset BH22 8BE.

**THE FOODPLANTS OF *CATAPLECTICA FARRENI* WALS.
(LEP.: EPERMENIIDAE)**

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TUTT (1902) RECORDS that the larvae of *Cataplectica farreni* Walsingham feed within the seeds of wild parsnip *Pastinaca satvia*, entering each at the base, devouring its contents and then leaving through a hole in the side, before spinning it to another seed and entering that. This refers to locations for the species in Cambridgeshire. This foodplant information is then repeated until the 1970s in texts such as Ford (1949) and Emmet (1979).

In 1975 Dr John Langmaid found the first Scottish *C. farreni*, an adult, at Muchalls, Kincardineshire (VC91), at rest on a flowerhead of hogweed *Heracleum sphondylium* and he speculated whether this could be its foodplant there (Langmaid, 1976). Emmet (1988) included this possibility in the second edition of his *Field Guide* as well as in *The Moths and Butterflies of Great Britain and Ireland (MBGBI)* (Emmet, 1991) and Godfray & Sterling (1993) referred to *P. sativa* "and perhaps other Apiaceae" in their first account of the Epermeniidae. However, in their definitive chapter on this family in *MBGBI* (Godfray & Sterling, 1996), they revert to referring only to *P. sativa*.

In Scotland *P. sativa* is found only as a casual introduction and it has never been recorded at Muchalls. Accordingly, following Langmaid's speculation, I collected some seedheads of *H. sphondylium* on 11 August 1993, overwintered them, and in mid-June 1994 a few adult *C. farreni* emerged, confirming hogweed as a natural foodplant at Muchalls. Some of the seeds had small holes in them and there was evidence of silk threads around them. The only other similar umbels which are common at Muchalls are hemlock water-dropwort *Oenanthe crocata*, which is found only along some streams by the shore, and angelica *Angelica sylvestris*, which is also restricted to damp areas. Seeds were collected from neither of these plants.

C. farreni has a dramatically disjunct distribution in Britain, recorded only from East Anglia, Northamptonshire, Oxfordshire and Kincardineshire. Godfray & Sterling (*op. cit.*) comment that it is "probably under-recorded" and I concur with this. Despite its continued presence at Muchalls, and many searches, adults have only been found there on three or four occasions. Hogweed is, of course, an abundant and widespread plant and it seems likely that *C. farreni* will be found elsewhere on Britain's east coast. It would also be of interest to discover whether *H. sphondylium* is used as a foodplant in East Anglia.

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The British species of *Stigmus* Panzer, 1804 (Hym.: Sphecidae)

This is a follow up note to one published earlier, where *Stigmus pendulus* was reported as new to Britain (Allen, 1987 *Stigmus pendulus* Panzer (Hymenoptera: Sphecidae) new to Britain. *Entomologist's Gazette* 38: 214). In that paper a key was given to the two British *Stigmus* species. Unfortunately, by a *lapsus*, I transposed the mesopleural character, rendering the key of limited value. By way of amendment I present a revised key here:

1. Upper part of mesopleuron strongly reticulate, so as to appear dull and not reflect light; pronotal tubercle pale yellowish-brown, at least posteriorly; male with the mesoscutum dull, shagreened (in the female more shining) *Stigmus solskyi* Morawitz, A.
- Upper part of mesopleuron more weakly sculptured, reflecting light between the weak rugae; pronotal tubercle nearly black; male and female with the mesoscutum shining, reflecting light strongly.....*Stigmus pendulus* Panzer

S. pendulus is still a rare species in Britain but has now been recorded from several of the home counties. These include another Kent record (L. Clemons) and records from Surrey (S. Miles), Middlesex (C.W. Plant), Hertfordshire (R. Uffen) (all *pers. comm.*) and Essex (Harvey & Plant, 1996, A provisional list of the bees, wasps and ants (Hymenoptera: Aculeata) of Essex. *Essex Naturalist* 13 (new series): 43-115).

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**QUANTITATIVE DATA CONCERNING THE OVIPOSITION OF
BOMBYLIUS FIMBRIATUS MEIGEN (DIP.: BOMBYLIIDAE), A
PARASITE OF *ANDRENA AGILISSIMA* (SCOPOLI)
(HYM.: ANDRENIDAE)**

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Summary

Bombylius fimbriatus Meigen females were observed at Isola d'Elba parasitising the nests of *Andrena agilissima* (Scopoli). Bee fly oviposition occurred around noon and usually a single egg (sometimes a few of them) was thrown into each opening. The fly did not seem to be able to discriminate between the *Andrena* nest openings and any other dark spot of comparable size. Mean time spent in hovering flights in front of the nests and in oviposition has been calculated from filmed sequences. On the base of quantitative data some inferences have been drawn regarding a few other aspects of oviposition behaviour.

Introduction

Bee flies (Diptera: Bombyliidae) parasitise other insects, especially Orthoptera, Lepidoptera, Coleoptera, Hymenoptera and Diptera, and *Bombylius* seems specialised in attacking solitary bees and, less usually, wasps (Hull, 1973).

Although some species of *Bombylius* are widespread and easily observed, few data are available about their behaviour. Dufour (1858) gave the first account of the life history of a *Bombylius* (*B. major* L. living at the expenses of an *Andrena*); since then little and scattered information is available.

A description of the oviposition in *Bombylius* was briefly reported by Chapman (1878) (*B. canescans* Mikan parasitising the solitary wasp *Odynerus spinipes* L.), Séguy and Baudot (1922) who saw *B. vulpinus* Wiedemann (as *fugax* Wiedemann) throwing its eggs into the nest of the bee *Panurgus dentipes* Latr., Scott (1952) and Knight (1968). Associations between a *Bombylius* and an *Andrena* host were reported among others, by Chapman (*op. cit.*: *B. major* L. and *A. labialis* (Kirby)). Knight (*op. cit.*: *B. major* L. and *Andrena* spp.), Bonelli (1964: *B. canescens* Mikan and *A. humilis* Imhoff) and Litt (1988: *B. major* L. and *A. fulva* (Müller)). Further references are listed in Du Merle (1975), yet no data have ever been published about *B. fimbriatus* Meigen, nor about *Andrena agilissima* (Scopoli) being a host of *Bombylius*.

In this paper we provide some quantitative information about oviposition of *Bombylius fimbriatus*.

Materials and Methods

Observations were carried out in the period 2/9 May 1993 at Isola d'Elba (Toscana, Italy) near a crossroad between the towns of Cavoli and Marina di Campo where an aggregation of some 130 nest openings of *Andrena agilissima* was found on an earth wall 2.5 metres high and six metres wide, facing south-west.

During our observations the soil temperature of the site varied on the average from 18°C (at 10.00am) to 21°C (at 5.00pm). In the same period the air temperature varied between 17°C and 23°C.

Above the earth wall there is a holm oak *Quercus ilex* wood, surrounded by typical Mediterranean scrub (cisto-lavanduletea) with *Lavandula stoechas*, *Cistus salvifolius*, *C. monspeliensis*, *C. incanus*; the wall is fully devoid of vegetation. At Isola d'Elba precipitations in May-June are usually less than 25mm; overall annual precipitations are usually about 700mm.

The site was visited every day from 8.30am to 5.30pm. Bee flies were filmed when close to the bee nests by means of a SONY Video Camera Recorder Hi8 CCD-V800E.

Analysing the tape by means of a video recorder we calculated the number and duration of the "wait time", and of the "oviposition time". The "wait time" is the time that the bee fly spends hovering in front of an *Andrena* nest hole (or a wrong target) before throwing its egg; the "oviposition time" is the combined duration of the movements of the *Bombylius* female laying her egg: she suddenly lowers, pushes her abdomen forward hurling an egg to the bee nest and finally returns to a horizontal position. "False waits" (hovering flights not followed by oviposition) were also counted.

Lastly we recorded how many times a bee fly female laid into the same hole and we noticed whether the egg was directed towards either an *Andrena* nest ("right target") or an "wrong target", i.e. any dark object or spot different from a bee nest opening.

Results and Discussion

Bombylius fimbriatus females arrived at the bee nests around 11.30am and stayed there until about 1.30pm (solar time). Their presence at the site was observed during that time period only.

Since we did not mark *Bombylius* females, we cannot tell the number of different flies to which data refer, and whether the individuals present on different days were the same or different ones; however, we never saw more than two bee flies hovering simultaneously over the wall.

The sequences showing *Bombylius* behaviour last 21 minutes and 1 second in total; 102 filmed sequences, varying in length from one second to one minute and 14 seconds were examined. Data summarised in Table 1 are concerned with all observed sequences, either complete or incomplete. However, to calculate the mean "oviposition time" and the mean "wait time"

we used uniquely complete sequences showing full behavioural acts filmed from the beginning to the end, whose time length could be determined; incomplete sequences were discarded. The employed values included 184 ovipositions, either into "right" or "wrong targets" (114 resulted incomplete if compared with those, for a total of 298, see Table 1) and 251 waits followed from oviposition (either into "right" or "wrong targets") (47 incomplete, for a total of 298, see Table 1); 16 "false waits" were also considered (three incomplete, for a total of 19, see Table 1). Complete sequences of ovipositions into true nests ("right targets") were 111 (31 incomplete, for a total of 142, see Table 1), into "wrong targets" were 27 (12 incomplete, for a total of 39, see Table 1).

The average frequency of oviposition was 298 (number of ovipositions) in 1261 seconds (duration of the film) = 0.236 per second. That means that *Bombylius* "swooped" once every 4.2 seconds on the average. This value could be overestimated for it is referred just to the filming of *Bombylius* when it was detected near the nests of *Andrena*.

The average "oviposition time" was 0.087 seconds ($n = 184$, range 0.04-0.12, SD = 0.02), and the average "wait time" was 2.24 seconds ($n = 251$, range: 0.16-7.32, SD = 1.06).

The frequency distribution of the oviposition during the day did not show any significant pattern and it maintained a constant rhythm when the fly stayed close to the bee nests.

Usually *Bombylius* laid only once per opening, afterwards it often moved to a new target. When more than one egg was thrown into the same hole (see Table 1, fourth column), it was difficult to understand which stimuli cause the bee fly to lay more than once.

Though at the beginning of its stay close to the *Andrena* nesting site *Bombylius* showed a somewhat lower frequency of oviposition and often hovered without laying, this trend was not statistically significant ($\chi^2 = 8.43$, 6 df).

There are no differences between the mean waiting times not followed from an oviposition or followed from it (Mann-Whitney U test = 1602, $n_1 = 16$, $n_2 = 251$, $p = 0.071$).

The choice of the target by *Bombylius* seemed to be primarily linked to the darkness of a point in comparison to that of the surrounding soil. So we often observed the fly throwing an egg towards different small dark spots as rock crevices, stones, roots etc ("wrong targets"). Even if at a first examination the shape did not seem to be an important clue for the fly choice, at a closer analysis some more subtle conditions appear to be at work. In fact *Bombylius* females spent less time waiting in front of an *Andrena* nest opening, before oviposition, than in front of a "wrong target" (Mann-Whitney U test = 2451, $n_1 = 27$, $n_2 = 111$, $p = 0.002$); so probably the right place where to lay eggs could be detected more readily by the flies. Moreover, multiple ovipositions

seem to have been more common into "right targets" (35 compared to one into "wrong targets" and to ten into "undetermined" ones).

The ecological variables that could influence the behaviour of the bee fly have not been examined. For instance, the influence of the air temperature on the oviposition rate should be evaluated. Furthermore we could not see any interaction between the bees, which were very abundant, and the flies; nor whether any kind of competition existed among *Bombylius* females, so few in a large area available for oviposition.

| Time Range | Duration of recorded sequences (sec) | No. of acts | No. of ovipositions* | False waits | Right Targets | Wrong Targets | Undetermined Targets** |
|---------------|--------------------------------------|-------------|----------------------|-------------|---------------|---------------|------------------------|
| 11.40-11.49am | 71 | 18 | 14 (2-12) | 4 | 11 | 5 | 2 |
| 11.50-11.59am | 111 | 31 | 29 (3-26) | 2 | 8 | 3 | 20 |
| 0.00- 0.09pm | 369 | 99 | 93 (13-80) | 6 | 50 | 14 | 35 |
| 0.10- 0.19pm | 388 | 96 | 91 (13-78) | 5 | 42 | 10 | 44 |
| 0.20-0.29pm | 210 | 48 | 46 (10-36) | 2 | 18 | 6 | 24 |
| 1.20-1.29pm | 82 | 14 | 14 (2-12) | 0 | 8 | 0 | 6 |
| 1.30-1.39pm | 30 | 11 | 11 (3-8) | 0 | 5 | 1 | 5 |
| Total | 1261 | 317 | 298 (46-252) | 19 | 142 | 39 | 136 |

Table 1: Data concerning *Bombylius fimbriatus* oviposition.

* Values between brackets are respectively the ovipositions directed to the same target (multiple ovipositions) and to different ones (single ovipositions).

** Targets unrecognisable from the analysis of the filmed sequences.

Acknowledgements

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High population densities of Garden Tiger Moth caterpillars *Arctia caja* L. (Lep.: Arctiidae) on Handa Island, Sutherland.

For a number of years, small numbers of caterpillars of the Garden Tiger Moth *Arctia caja* L. have been recorded by seasonal wardens of the Scottish Wildlife Trust on Handa Island Wildlife Reserve, north-west Scotland. In 1995 and 1996 numbers were unusually high. So dramatic was the black carpet of caterpillars, that it attracted the attention of the national media (e.g. Chalmers, "Something is aflutter on island people left in 1848", *Daily Mail*, 10th June, 1995, page 3). High densities of *Arctia caja* caterpillars have been seen elsewhere, on similar dune grasslands on the west coast of Scotland (Mark Young, *pers. comm.*). Data was collected on population densities and foodplant preferences in order to provide baseline information for comparison with other sites and future years on Handa. The population on Handa was confined to two, contiguous, and relatively homogenous dune grassland areas (mainly SD6 and SD7 in Rodwell, J (1991 et seq) *British Plant Communities*. 5 Vols. Cambridge University Press).

On the 2.v.1995, 60 x 1m² stratified random quadrats were sampled throughout the main area of distribution to estimate density of caterpillars. Within this area there were two density classes: "high", within a dune grassland area adjacent to the open dunes, and "low", within a band of neutral grassland surrounding the dune grassland to the west. The boundary between the two classes was discrete enough to be delineated with the naked eye and mapped.

On the 12.v.96, 100 x 1m² stratified random quadrats were sampled (60 in the "high" density area, 40 in the "low" density area). The two areas were again discrete. Also during 1996, the foodplants of the caterpillars were recorded along 2 x 30m transects in the high density area, as well as more casually over the spring and early summer. The results are summarised below.

| | | | | | |
|------|--------------|----------------------|------|--------------|---------------------|
| 1995 | High density | 20.90/m ² | 1996 | High density | 8.75/m ² |
| | Low density | 4.19/m ² | | Low density | 2.23/m ² |
| | Mean | 11.40/m ² | | Mean | 5.49/m ² |

On the 2.v.95, the entire population was confined to an area of neutral grassland and open dune connecting two beaches on the south-east of the island (approximately 80,000m²). During the next few weeks of 1995 the caterpillars spread to cover a much wider area, mostly neutral grassland with occasional wet heath and willow *Salix aurita* scrub, where they occurred at lower densities.

The distribution on 12.v.96 was similar to the final extent covered in 1995. The area of highest density was again associated with open dunes bordering neutral grassland.

The transects showed red fescue *Festuca rubra* to be the favoured host plant in the highest density areas, although in other areas caterpillars had almost completely defoliated patches of willow scrub *Salix aurita* and broad-leaved dock *Rumex obtusifolius*. The high figure for *Festuca rubra* is probably related to its dominance within the sward.

In 1993, most sheep grazing was removed from Handa, with a few remaining stock removed in 1994. Since this time the only significant grazing mammal has been the rabbit. The population explosion of *Arctia caja* caterpillars on Handa seems in some way to be related to this recent change in management on the reserve.

It should be noted that despite the massive number of caterpillars present in early summer, most die before they pupate. The high mortality is probably due to a fungal or viral pathogen (Phillip Entwistle, *pers. comm.*) which affects caterpillars of all ages and sizes.— JONATHAN HUGHES and JULIE STONEMAN, 11a King Street, Embo, Sutherland IV25 3PU.

***Prionus coriarius* (Linn.) (Col.: Cerambycidae) in Hampshire**

On 8 August 1996 I took a single male specimen of *Prionus coriarius* at Denny Wood, New Forest, Hampshire. I caught it in my hand as it flew noisily across a clearing in late afternoon. In spite of two further visits I failed to discover others. According to Hyman & Parsons (1992) (*Review of the scarce and threatened Coleoptera of Great Britain*. Part 1., UK Joint Nature Conservation Committee, Peterborough), *P. coriarius* come under category *Notable A*. Prior to 1970 it was reported from all the southern counties, most of the midlands as far north as Cheshire and Lancashire, and from Glamorgan and Denbighshire. Since 1970 it has only been reported from East and West Sussex, East and West Kent, Surrey, Berkshire, East Suffolk and Flintshire.

I would be most interested to know if this species is increasing its range, or if my single specimen does no more than highlight under reporting of this spectacular beetle.— DR MICHAEL A. SALMON, Avon Lodge, Woodgreen, Hampshire SP6 2AU.

CONTRIBUTION TO THE EARLY STAGES OF *XYLENA EXSOLETA* L.(LEP.: NOCTUIDAE)

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THE HISTORY of *Xylena exsoleta* in Britain since the turn of the century is well documented (Lorimer, in Heath and Emmet, 1983). In modern times the moth has been recorded mostly from Scotland. In the spring of 1995, a pairing was made from moths at sugar in Banffshire. Eggs were laid in quantity, batches being distributed to colleagues and their acquaintances in both Scotland and parts of England. The fate of the numerous broods reared by the different persons in widely differing locations and on a range of host-plants is summarised in this paper. The opportunity to rear this fine insect prompted a review by GMH of literature references to larval descriptions and illustrations, which appear to have arisen during the 1880s and which have a uniformity about them that could suggest a common origin; no account could be found of the life-history or of rearing in captivity. Only one published record of the occurrence in Britain of the wild larva is known to us.

The Banffshire Site.

This consists of a mixture of wet and dry heathland, bog, marsh and sallow carr, on a gentle northerly slope at around 160m. It is surrounded by rather unintensive mixed farmland. *X. vetusta* Hb. is also present, and slightly the more numerous. In autumn, the main flight period of *exsoleta* at this locality extends from the last week in September to the middle of October. Extreme dates during the years 1990-95 were 17 September to 5 November, the latter being the only sighting of the month. Tutt (1901-05) gives several references to November as a good month for the moth, which may have been the case further south then. Sugaring is usually many times as productive as light trapping at this season, as neither *Xylena* species seems to fly much in autumn - identifiable individuals re-appear night after night at the same or an adjacent sugared post. Ripe blackberries are also visited.

Where *exsoleta* hibernates is not known. None has yet been found in various outbuildings used by *Aglaia urticae* L. and the large dense tussocks of tufted hair-grass and *Juncus* which cover parts of the site seem a more likely choice. In spring *exsoleta* re-appears during the first proper spell of mild weather; exceptionally, as early as 6 February as in 1993, but normally slightly before the first *Orthosia* species emerge. This is well before any sallow catkins show blossom, so sugar is again attractive, and *exsoleta* may attend in temperatures as low as 3°C. However, light trapping is equally effective now, though a high proportion of moths do not enter the trap itself

but settle on the ground some distance away. Latest sightings during 1990-95 were on 23 April; thus the flight period here is rather earlier than the "late March to May, exceptionally June" given in Heath and Emmet (1983).

In early April 1995, favourable weather produced up to five *exsoleta* per look at sugar, giving a rare opportunity to study the life history of this scarce and declining species. Two moths of each sex were placed in a large container, and supplied with sallow catkins plus a variety of green and dead vegetation; they were fed each night with sugar solution, which they drank (and excreted) copiously. One pair was observed in copulation on 20/21 April, and egg-laying began two days later. Eggs were laid in prodigious numbers; Tutt (*loc. cit.*) states 1000-2000 per female. Most were laid in large batches, carefully packed well down inside old flowering heads of Soft Rush *Juncus effusus*. Dry seed-heads of Cocks-foot grass *Dactylis glomerata*, Self-heal *Prunella vulgaris* and Sneezewort *Achillea ptarmica* were also used, but no eggs were laid on the sallow *Salix* catkins, green vegetation, crumpled paper tissue or on the sides and muslin top of the container. Eggs were small in relation to the size of the moth, and creamy white when first laid, but soon changing to a pinky brown which closely matched the colour of the old seed-heads. Once sufficient eggs had been obtained, the moths were released at the original site.

Accounts of Rearing

Eggs were distributed by RL to a number of colleagues in England and in Scotland; the fate of each batch is recorded here as far as we know of them.

1. By GMH in Norfolk.

Eggs hatched in around ten days. Recorded dates of moults of most advanced larvae reared by GMH in Norfolk were 13, 18, 23 and 28 May. Larvae were managed initially in batches of twenty in plastic boxes measuring 150 x 100 x 50 mm. Larvae on dock ate only the broadleaved *Rumex obtusifolia* but during the fourth instar the furthest developed attacked and devoured their smaller brethren, especially those in moult or newly moulted; this was attributed to food being allowed to remain long enough to go limp during the very hot weather at that time, so larvae were segregated into batches of four, six and fifteen depending on size and put into appropriately-sized containers; from that time dock was selected only from the most luscious and rapid growth, avoiding flat, pale leaves no matter how young. No further cannibalism occurred in any box.

Boxes of last instar larvae became heavy with condensation due mainly, it was thought, to the high moisture content of the dock, and for a while boxes were laboriously cleaned and dried and the paper lining and crumpled resting niches changed frequently. Later into the instar it was thought dampness might not be inappropriate for this larva of wet Scottish moorland, so condensation was allowed to accumulate and cleaned only at longer

intervals. Larvae appeared at the time no worse for this indifferent treatment and some colleagues had adopted a similar pattern.

Last instar larvae were far less irritable than those of second and third instars, when they readily thrashed about at disturbance or twitched violently if contacted by another larva. The larger larvae were indeed placid by contrast and when handled they displayed no such vigour and unlike so many other species they did not vomit then. They rarely curled up, being mostly laid stretched, and when replaced in their box they just rambled off. Their crotchets gave a grip that might feel sticky to human skin but which allowed the larva to be separated from its perch with no suggestion of damage. They fed by day and night. When approaching full-growth they were given fresh flowering shoots of sorrel *Rumex acetosa* and these were readily devoured.

As larvae appeared to be ready to prepare for pupation they were divided into three treatments, two smaller batches put into slightly moist peat to a depth of 100mm, and a larger batch of forty larvae into 40mm of peat over dried sharp sand that sloped from 110mm to none beneath peat. Larvae were introduced as they were judged to approach maturity, this being when they felt firm to the touch in contrast to their earlier rather soft, flabby feel. Larvae spent their first two days if not in constant motion then at least for much of that time, day and night, until they finally rested full length against the glass lid at the top of the wooden box. The earliest disappeared after 2-3 days, but thereafter it was not possible to record the time of individuals because of continued addition of larvae until 24 June, by which time all larvae had been judged to be fully grown. During the while that larvae were motionless the body colour changed from uniform pea-green to mottled yellow and green, with patches of alternating colours, not at all attractive and indeed suggestive of sickness (or as parasitism might appear in wild larvae). Also at this time larvae shortened in length to some three-quarters and with rings swollen, taut and wet they shortly disappeared into peat, having not eaten for several days. All larvae had gone into peat or were resting upon it by 28 June.

Examination of the pupating medium soon found corpses in blackened, rotting state both upon the surface of peat and below with no cocoon begun; others had made a cocoon but failed to pupate. Of a total of 72 mature larvae only 11 had pupated, being distributed through the three pupal batches with no one proving advantageous. One moth that emerged on 17 August was the sole survivor of the Norfolk attempt.

Most of the larval life of batches reared in England was passed under cool to cold conditions with temperatures around 10°C, but the remarkable heatwave of early May shot thermometers to 21°C and cooler sites had to be located: late May was extremely cold and the first two weeks of June quite the most dismal on record with indoor temperatures regularly no more than 10°C.

2. By Robert Harvey in Norfolk

Starting with around 100 eggs, larvae were fed throughout on dock leaves. Most larvae reached full growth but then suffered heavy losses after entering soil. 15 moths were reared, all of them from pupae formed in kitchen-roll paper that had not been available to the rest of the batch.

3. By RL in Banffshire

Eggs hatched in 10-12 days. The tiny larvae were extremely active for the first three days (in the wild this presumably ensures dispersal). They were kept in plastic boxes in an unheated room, exposed to normal daylight. Initially they were fed on potted clumps of grass, mainly *Poa annua*. Couch grass *Agropyron repens* was also eaten, but otherwise they would eat only meadow vetchling *Lathyrus pratensis* from a wide variety of herbaceous plants offered.

Once past the second instar the larvae stopped eating grasses; they were offered a wide selection of plants and shrubs picked at or near the original site of their parents. For a supposedly polyphagous species, *exsoleta* proved very choosy. The following plants were rejected or barely nibbled - chickweed, cranes-bill, bird's-foot trefoil, tufted-vetch, clovers, broom, meadow-sweet, raspberry, bramble, strawberry, black-currant, rowan, knotgrass, dead-nettle, groundsel, honeysuckle, willow, rush and wood club-rush. However, bird-cherry *Prunus padus* was eaten avidly and the larvae completed their growth on this food with negligible loss. Sprigs and, eventually, small branches were provided. These had to be replenished twice a day during the final instar, which at least ensured freshness. Also eaten were large crisp leaves of dock and sorrel when newly picked.

Supplies of bird cherry being limited, dozens of surplus larvae were periodically released at the original site; none was ever seen again. The twenty-five penultimate instar larvae eventually retained became fully-grown in mid to late June. In appearance and behaviour they agreed closely with the detailed description given by GMH. In the penultimate instar the length attained was 40-45 mm, and in the final instar they reached 65-70mm. They were remarkably invariable in colour and pattern.

Pupation took place at or near the bottom of a loose mixture of unsterilised, slightly damp, peat and *Sphagnum*, 20cm deep in large containers. Unlike other genera of autumn moths such as *Agrochola* and *Xanthia*, there seemed to be no prepupal diapause. One of the twenty-five larvae produced a deformed pupa. The twenty-four healthy pupae were disinterred and laid upon the surface of slightly damp *Sphagnum* but not sprayed. Development was slow and gradual, producing moths without loss; these emerged in the middle part of the day between 19 August and 13 September. Unless there is a diapause after emergence in the wild, this would be earlier than for wild moths. All were in the upper half of the normal size range. They were released at the original site.

4. By M.R. Young in Aberdeenshire

In the first instar, larvae were fed entirely on grasses, eating both coarse and fine. From the second instar, half were reared solely on hawthorn *Crataegus monogyna* leaves, and half on blackthorn *Prunus spinosa* leaves with equal success. They were kept entirely in the dark in a warm kitchen, and they fed up very rapidly. Larval losses were about 10%, and occurred in the third or fourth instar.

Most larvae were passed on to others or released. The two dozen larvae finally retained produced moths without loss. They pupated in a mixture of potting compost and sand, 10-15 cm deep. The pupae were not watered. Moths were of normal size.

5. By R.M. Palmer in Aberdeenshire

Of twenty third instar larvae received, three lagged behind and died. The seventeen pupae then obtained gave rise to fourteen moths. Hawthorn was the sole foodplant. No special treatments or techniques were used.

6. By David Brown in Warwickshire.

Larvae hatching from 120 ova were started on a mixture of dock and willow, but they much preferred the former. They were reared in plastic boxes, and forced throughout at high temperatures, sometimes in direct sunlight. Willow was offered at intervals but always refused. Overcrowding was tolerated, with no cannibalism. Five at most were lost before the final instar.

In the final instar the larvae were transported to North Wales. They now consumed huge amounts of carefully selected dock, which had to be replenished two to three times a day. About twenty full-grown larvae became less healthy, and mostly died. The remaining 100 larvae burrowed into 10cm of bulb fibre, from 6 June onwards, and they were left undisturbed until early August.

Only thirty of the 100 larvae that went into compost were found to have pupated successfully, the others being dead and shrivelled. The thirty healthy pupae were sprayed with water daily, and in due course twenty-six gave rise to moths.

7. By Andrew Gardner in Warwickshire.

Larvae from 90 ova were reared in plastic boxes at a constant room temperature of about 21°C. They were fed on dock, refusing willow that was offered at various times. Few were lost during the early instars, but twenty-five died in the penultimate or final instar. Full growth was reached by mid-June, but the 60 larvae which went down into bulb fibre produced only twenty live pupae and from these, sixteen moths emerged.

8. By Michelle Stephenson in Warwickshire.

Began with twenty-four second instar larvae, reared on dock at room temperature. Again, willow was refused. Two larvae died before the final

instar. None of the twenty-two larvae that reached full growth pupated successfully. The 20cm of bulb fibre provided may have been kept too dry.

9. By John Ward in Northamptonshire

Newly-hatched larvae were put on to osier *Salix viminalis* foliage in plastic boxes and they fed up well enough until the second instar when they were sleeved on osier in the hope of simulating a more natural environment. Development became very uneven with increasing losses so twenty-four of the largest individuals were sleeved on growing dock on which they fed until they were fully grown, when most of them died.

Fifteen of the surviving larger larvae of those still on osier were then tried individually in plastic boxes and offered a range of food that included flowers of sorrel and buttercup, also dock and osier, but these larvae shared the fate of their fellows, and there were no viable pupae from any treatment.

We understand that a similar attempt to rear this species was made a while prior to this study with larvae from three batches of eggs reared separately by different persons in different parts of England; the history of these larvae is said to be similar to our experience except that no moths at all were reared.

Summary descriptions of the early stages.

The only illustrations of early instars known to us are those by Buckler (1896) and Wilson (1880); the latter is crudely unrealistic while Buckler's figure, plate 96, fig. 2, does not convey the impact of a dark-green larva with fine stripes, and his larger figure 2a is improbable according to our experience.

First instar: length to 4mm just prior to moult; body uniformly yellow-green, the skin glassy and shining, totally lacking stripes or ornamentation and relieved only by the finely dotted black warts each finely ringed in blanched green and bearing a stiff short bristle. Head pale light brownish-green, prothoracic plate pale brown heavily studded with black warts and bristles, anal plate similar but paler, true legs, prolegs and anal claspers all translucent with black flecks.

Second instar: length at full growth to 8mm, glassy olive-green with fine dorsal and rather thicker subdorsal lines both pale-yellow, a fainter creamy spiracular band merging into the pale ventral region, warts black, conspicuous. All body lines continuous from prothoracic plate to anal plate.

Third instar: length to 15mm, deeper matt green with similar body lines and of same relative proportions but brighter and better defined, the whitish subspiracular in particular now contrasted against the dappled green and white ventral region; warts black but smaller in relation to body size and dorsally not outstanding.

Fourth instar: length to 26mm, handsome, fulvous darker green, the dorsal line so narrow and faint as to be noticeable only under magnification, and then well interrupted at ring divisions; subdorsal bold deep-yellow, subspiracular narrower than in the previous instar but crisply yellowish-white; tiny black warts quite indistinguishable from the wriggling dark-green pattern over the pale ground colour. In this instar and in the next the larva bears a striking resemblance to that of *Heliothis maritima* Grasl. (but of course lacking the posteriorly-directed body spines of that species).

Fifth instar: length to 35mm. similar in every aspect to the previous instar, the anal claspers with better developed extension of subspiracular stripe, which on the body is itself much broader (twice as broad) as the subdorsal, the dorsal scarcely discernible even under magnification.

Final instar: six instars were counted of the larvae reared by GH and RL, but Dr H. Beck who also reared larvae from this same stock has reported seven instars. The larva at full growth recorded by Buckler (1886) to be two and a half inches (60mm) long is quite correct, the largest even to 70mm, but considerable shortening takes place as the larva ceases to feed and as it grows firm to the touch, but before it begins its marathon perambulation prior to entering the pupating medium. It is only at this instar that the larva displays its highly individual and ornamental pattern that has led Barrett (1900) to write, page 54, "very few larva of equal beauty to this are known here" – an apt expression that has been copied by later writers.

Contrary to the account given by Lorimer (in Heath & Emmet, 1983) there was very little variation amongst the many larvae reared to last instar by GMH and RL; the separate orange lateral dashes that margin above the subspiracular band were quite uniform in size and colour, never dark-red as figured by Buckler (1886), Wilson (1880), Barrett (1900), Stokoe (1948) or Hoffmann (1893). The colour of the subdorsal and subspiracular stripes varied from whitish to cream and pale-yellow. No larva developed orange (and certainly none red) markings dorsally or along the subdorsal stripe, and the figure 2a of Buckler (*loc. cit.*, pl. 96) appears a combination of fifth instar with artist's licence that depicts rich orange subdorsals. Only the intensity of black markings that bordered the subdorsal could be described as significantly variable, in the weakest development reduced to a narrow line that merely edged the subdorsal and simply linked the trapezoidal warts which, in this genus and its allies, are so far displaced towards the subdorsal as to be almost in straight alignment; the opposite was the maximum development of this black figure to broadly rectangular proportions that engulfed both warts so masking their usual black edges. There was but one example only of each of these extreme varieties, but the weakly etched form is the sole (and very stylised) figure of Wilson (*loc. cit.*, pl. 38, larger fig. 13), and Buckler's fig. 2d is even more extreme. The illustrations of

Hoffmann (pl. 32, figs. 21a, 21b) are also of the stylised presentation of that time, fig. 21b being remarkable for the total absence of orange from the subspiracular band, while fig. 21a has its upper edge bright-red and continuous.

Pupa

Barrett (1900) gives a good description that is evidently copied by Lorimer in Heath and Emmet (1983): the most significant features are its light, glossy, thin cuticle of chestnut-brown colour, contorted abdominal rings and rather *Cucullia*-like appearance but so much more substantial and with no projection of mouth-parts beyond the wing covers. Cremaster conical and heavily sculptured, bearing two almost straight, pointed spines 1mm long, which diverge at an angle usually of 30-40 degrees, whereas those of *X. vetusta* are parallel.

Cocoon

A large rounded, oval structure, greatly larger than the pupa, which is comparatively short and dumpy although bulky; the cocoon is of fragile construction that does not appear to be strengthened by silk, instead its wall of some 2-3mm thickness is simply firmly pressed to present a smooth interior. Those in sand are reminiscent of the *Agrochola* texture and like them it crumbles as soon as touched.

Larval comparison with other species

The last instar is so individual that it could not be confused with any other larva in Britain or indeed in Europe. The well-developed but fine dark or blackish dorsal edge of the subspiracular band present in *X. vetusta* in both last instar and in earlier instars is an immediate and constant character that easily separates *exsoleta* from it, while *vetusta* has never a pea-green body colour and lacks the black subdorsal suffusion around the trapezoidal warts; *vetusta* alone has the continuous pale medio-dorsal line.

Confusion is more likely between the earlier instars of *exsoleta* with larger larvae of common green noctuids that feed up at the same time of year; but the common green *Orthosia* larvae have yellow dots through the green body colour and display a conspicuous pale dorsal stripe against weak subdorsals, and have a large, rounded, pale-brown head, which features are shared also by *Dryobotodes eremita*. The *Lithophane* species have well-marked and well-developed, conspicuous dorsal stripe and large, rounded pale-brown head. The head of the young *exsoleta* larva is consistently pale green with fainter flecks.

The third to fifth instars of *exsoleta* could be likened to the larger and yellow-striped larva of *Ceramica pisi* L. because this larva lacks a dorsal stripe and because both species have their spiracles placed at the dorsal edge of the subspiracular band; in *C. pisi* the dorsum is much darker and its mottling denser than those of its lateral zones, whereas in *exsoleta* these zones are all of equal intensity; the head of *C. pisi* is warm honey-coloured

to light-brown, that of *exsoleta* pale-green; however the larva of *C. pisi* is scarcely to be found before September whereas young *exsoleta* will be feeding in May.

The larva closest in superficial appearance to the third to fifth instar *exsoleta* is the last instar *Heliothis maritima* because of the matt dark-green body colour and pale-yellow lateral stripes present in both species; *maritima* has its head and prothoracic plate with black etching, and particularly its skin coated with tiny black, backwardly-directed spines; and *maritima* is of course another September feeder.

Occurrence of the wild larva

The finding of so striking a larva as the last instar of *X. exsoleta* would be a matter for record, even at a time when the species might be more plentiful than it is today, yet the absence of mention of the larva by Tutt (1901) suggests that wild-found examples were not recorded if not unknown up to the time when Tutt compiled his book. The range of figures made by Buckler would seem to indicate that his larvae were reared from the egg, and this at a time when he was receiving wild-found material from many colleagues of very diverse and hitherto undescribed larvae. In fact there is no book known to us that actually states the fact of a larva ever being found wild.

Examination of British journals has brought to light but one instance of the wild larva of *exsoleta*, this of a moth bred 28.ix.1929 by J.J. Walker from a larva found on thistle at Tubney, Berkshire (Baker, 1990). A second record (Haggett, 1992) of a third-grown larva found in a water-trap during the Welsh peatland invertebrate survey is now recognised to have been a mis-identification due to the lack of knowledge of the early instars. Just recently we have learned from John Fenn of his discovery of a fully grown last instar larva amongst commercially grown lettuces at Wissington, Norfolk, in 1950, and that he knew additionally of larval records from Vic Day in the Stoke Ferry area also of that time; these records are notable also because they confirm the species to be still resident in Norfolk at that date.

There are however two recent records of the wild larva, both unpublished, and for which we are pleased to acknowledge the experience of Dr M.R. Young. The first was a larva at Udney in 1974 and the second at Oldmeldrum in 1986, both in Aberdeenshire, Scotland; both were full-grown and engaged in their pre-pupatory wanderings, thus giving no clue as to foodplant.

There may surely be records of wild larvae from the period of the last century into this when the insect was regarded as common over Britain including the southern counties of England, and these would be worthy of collation. In the absence of such data we can only conclude that the life history of *exsoleta* has been based wholly on examples reared from the egg.

There are two accounts of larvae found in the Middle East, one of fully fed larvae found in April in Iran, the other of a larva found by Mountfort

(Wiltshire, 1948) in Cyprus on 10 April. Another unpublished account from John Fenn concerns his finding two larvae both in the penultimate instar feeding on low herbs in the Italian Alps at Col de Tende on 17-18 July 1974, and which reminded him of *Heliothis virescens* Hufn.; they constitute the latest larval dates known but still produced moths in the following September.

Discussion

The main feature of the rearing programme was the contrast between the success rather casually achieved by the Scottish rearers, and the high levels of mortality at about the time of pupation amongst the stock reared in England.

Because all the ova were from the same source, differences in viability can be ruled out. Nor can husbandry have been a factor when so many experienced breeders had similar problems at the same stage. The simplest explanation is that the Scottish reared stock were fed mostly on a rosaceous shrub whereas dock was widely used in England. It might be that dock alone is not quite a sufficient food for last instar larvae. Many noctuid larvae that begin life feeding on low plants later climb to complete their growth on the foliage of woody shrubs or trees.

However, there is a more intriguing, if less likely possibility – that it was no coincidence the larvae reared in an area where the moth is still resident did much better than those reared in areas from which the species has died out in recent history. Perhaps *exsoleta* is particularly vulnerable to minute levels of toxins in its foodplant, arising from agricultural contaminants or industrial pollutants. The very large volume of food consumed by the larva in its final instar, remarked upon by many of the breeders, might cause toxin build-up to a fatal level at the time of pupation.

Until this question is resolved, the consensus of those taking part in this study is that *exsoleta* larvae should be reared in warm, and possibly humid conditions. At least in the early instars dock seems to be a suitable food, but it is important to select only large, fast-grown, crisp leaves from robust, vigorous plants, more readily obtainable from *Rumex obtusifolia*. Especially in the final instar, plum, cherry or blackthorn should be supplied. The pupation medium should be deep (20cm) and not too dry. Because of the extreme fragility of the cocoon, the danger of disturbance by other tunnelling larvae should be avoided by provision of plenty of space and by limiting numbers.

The foodplant(s) of wild larvae remains unknown; at the Banffshire site it is clearly not willow, as RL had always assumed, and which is used by *X. vetusta* there; nor can it be bird cherry, blackthorn or hawthorn as these do not occur there naturally. The failure to find such a large, brightly coloured and (at least in captivity) diurnally feeding larva is puzzling, but fits in with the dearth of published records.

Acknowledgements

The co-operation of all who participated in this study is gratefully acknowledged, and all of us express our thanks for the rare opportunity to rear and examine this magnificent larva. Particular thanks are due to David Brown who co-ordinated results from his area.

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Bird-cherry Ermine *Yponomeuta evonymella* L. (Lep.: Yponomeutidae) infestations in the Scottish Highlands

Dr Murdo Macdonald of Strathpeffer reported to me that he had seen serious defoliation of Bird-cherry *Prunus padus* along the Bridge of Gairn and main Royal Deeside roads, between Ballater and Braemar, in the 10km squares NO19, 29 and 39, in June 1996. Whole trees had been stripped of their leaves and branches were covered in webs.

On returning home he found several Bird-cherry trees were also infested on the Moy Island in the River Conon (10km square NH45), though not as devastatingly as in Aberdeenshire. I visited this Ross-shire locality with my wife on 23 July and found the infected trees. A few imagines of *Yponomeuta evonymella* L. were emerging from the webs. Bird-cherry trees were examined on the short drive to Muir of Ord but the only infestation noted was at Orrin Falls in the same 10km square. This species is not shown as occurring in VC 106 on Map 2 of Volume 3 of *The Moths and Butterflies of Great Britain and Ireland*.—DEREK C. HULME, Ord House Drive, Muir of Ord, Ross-shire IV6 7UQ.

***Diaperis boleti* (L.) (Col.: Tenebrionidae) from a second
Huntingdonshire National Nature Reserve**

During a field meeting of the Huntingdonshire Fauna and Flora Society on 19 May 1996 at Woodwalton Fen I examined a clump of birch trees growing in the centre of this National Nature Reserve (grid reference TL2284). Several trees bore birch bracket fungi of *Piptoporus betulinus*. On one dead stem, on the northern edge of the clump, I noticed an old dry bracket fungus with large holes, 4-5mm diameter, bored into its stem. Breaking open the fungus, which was about 1.5mm up a two metre high dead stem, produced a single adult *Diaperis boleti* (L.). Bracket fungi on the other trees were promptly searched and another with similar sized holes was found half a metre above ground near the base of a multi-stemmed birch. This produced three more examples of *Diaperis* although one was a deformed teneral specimen. Other species of Coleoptera present in these fungi included two *Paromalus flavicornis* (Hbst.); one *Atheta fungi* (Gr.); four *Dacne bipustulata* (Thnb.); three *Orthoperus mundus* Matt.; one *Aridius bifasciatus* (Reitt.); about 30 *Cis bilamellatus* Wood; and five *Mycetophagus quadripustulatus* (L.).

The two old bracket fungi removed from the trees were brought home and placed in a plastic sandwich box together with the three mature specimens. The contents were not examined again until 18 July 1996 when I removed seven adult beetles to my collection. On 1 August the remains of the bracket fungi were removed and broken open. A total of 31 beetles were found, many still within pupal cells which formed discrete spheres approximately 12 mm in diameter. On the following day, 2 August 1996, 30 adult beetles were taken and released at three separate locations in Woodwalton Fen NNR; 16 at the original site, eight in an adjacent compartment, and six in the north-west of the Reserve in TL2285. At each site the beetles were either placed within holes bored into the flesh of the fungus, or the hymenium was eased away from the main body of the fungus and the beetles inserted between them. A bracket removed during the first visit in May had been left at the base of the tree. This was re-examined on 2 August and when two *D. boleti* emerged they and the fungus were replaced. When I finally cleaned out the semi-liquid contents of the box in which the fungus had been kept I found four more adult beetles together with scores of *Cis bilamellatus*.

Hyman and Parsons in their *Review of the scarce and threatened Coleoptera of Great Britain* (1992) list the nine Counties from which *Diaperis boleti* has been recorded including the only post 1970 records for East Sussex, East Kent and Huntingdonshire. This last record refers to Holme Fen NNR, approximately four kilometres NNE of Woodwalton Fen, where several coleopterists collected specimens in 1985.— R. COLIN WELCH, The Mathom House, Hemington, nr. Oundle, Peterborough PE8 5QJ.

THE ENCHANTED BUILDING

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IN THE Iguazu National Park, Argentina, above the famous falls, a dirt road runs alongside the Rio Iguazu, and in a small clearing in the forest between them is a most remarkable building. It consists of an elevated room set upon square-sectioned concrete pillars, and is connected by a concrete overhead pathway to a large, solid, square concrete block which forms a platform to house some machinery; one wall of the block backs onto the river. The building was constructed about 1983, and I came across it on 19 October 1994; the sight that met my glance that day was unbelievable. Much of the platform wall facing the building and the underside of the elevated pathway were covered with butterflies quietly feeding, presumably upon salts emanating from the cement; there was very little evidence of algal growth except in several areas, where in fact butterflies were sparse or absent. Well over 90% comprised only two species of large, grey *Hamadryas* settled with wings widespread – *H. februa* Hb. and *H. epinome* Feld. It would have been very difficult to insert a finger to touch the cement without making contact with a butterfly. Lesser numbers were settled on the concrete pillars and the underside of the elevated room, congregations being noted especially at the heads of the columns where there were also small clusters of nests of solitary wasps.

At the road margins in the vicinity were puddles and damp patches from rain, and there was also a small damp gutter beside a short drive close to one side of the building. The species feeding on the cement structure were to some extent different from those at roadside damp patches, and those at the damp gutter were different again. Two days of rain prevented my visiting the area again in 1994, and when I returned in October 1995 the building presented a very different picture. On arriving at Puerto Iguazu it became immediately apparent that butterflies were scarce, both around the hotel on the edge of the town and in the nearby forest, so I was not surprised to find only a few feeding at the cement walls of the building, nor did matters improve over the ensuing two weeks. However, on reflection, I realise that the main difference was the absence of the *Hamadryas* species in numbers; in fact quite a variety of other species were present in ones and twos.

Damp patches beside the road attracted characteristic, but small, assemblies of *Papilionidae* and *Pieridae*, in particular the common large yellow and orange *Coliadinae*, along with some Nymphalids – small *Ortilia* species, and quite a variety of bright medium-sized insects of such genera as *Doxocopa*, *Adelpha*, *Eunica* and *Pyrrhogyra*, plus the occasional Hesperiid or Riodinid, and the occasional Ithomiid-like Nymphalid *Eresia lansdorfi* Godt. This list also describes very well the composition of the small

assembly always present in the damp gutter beside the building, except that it was never seen to be visited by any *Papilionidae* or *Pieridae*, despite their presence only a few yards away at the roadside. Presumably water dripping from the building during rain carried dissolved salts from the cement to sufficiently alter the composition of the water which might remain to dampen the soil or gutter below. Elsewhere beside the building the ground is covered by low vegetation.

Of other species, besides the *Hamadryas* at the cement walls, only two were more frequent than to be noted in more than ones or twos, and these were the Nymphalid *Diaethria clymena* Cram. and the whitish Hesperiid *Mylon menippe* Hew., both of which are commonly seen beside roadside puddles. In 1994 several large Nymphalids, *Victorina stelenes* L., *Siproeta trayja* Hb. and *Smyrna blomfeldi* Fab. and two rather smaller *Memphis* species, *M. ryphea* Cram. and a black and blue one, probably *M. morvus* Fab., both with a wide distribution from Mexico to Argentina, were present.

A feature of roadside damp patches, at least in October, on the basalt plateau of northern Misiones is the frequent predominance of Nymphalids and absence of Pierids and Papilionids, or only a token representation of them. Feeding at the concrete of the building and at the damp gutter beside it was a considerable variety of medium-sized and small Nymphalids, many as singletons. They included several *Adelpha* species, *A. mincia* Hall commonly, and *A. iris* Drury, *A. goyama* Schaus and *A. calliphane* Fruh. rarely, *Pyrrhogyra amphiro* Bates, *Doxocopa linda* Feld., *D. agathina* Cram., *D. seraphina* Hb. and *D. zunilda* Godt. The small species included *Dynamine tithia* Hbn., *D. mylitta* Cram., *Diaethria candrena* Godt., *Paulogramma pyracmon* Godt., *Callicore eucale* Fruh. and *C. hydaspes* Drury, and also the small blue Riodinid *Lasseia agesilas* Latr. Three species of small brown Nymphalid were invariably present in small numbers, and were also attracted to the flowers of a tall ragwort (*Senecio* sp.), five to six feet in height, which grew beside the road; these were *Ortilia dicoma* Hew., *O. vellica* Hew. and *O. orthia* Hew.

On 14 October 1995, what I thought was a large brown Nymphalid was later identified as the Brassolid *Opsiphanes invirae* Hb. a species with a range from Honduras to Argentina. The specimen was observed feeding at one of the concrete pillars soon after noon in bright sunlight. Whether it was disturbed initially from the adjoining forest, or whether it came to feed spontaneously, there is no way of knowing. It made several short sorties, and twice settled on nearby foliage. The flight time of Brassolids is dusk and dawn, and DeVries (1987) emphasises this regarding this genus, and of *O. invirae* states that he has only taken it in baited traps high in the forest canopy in Costa Rica.

A surprising feature was the absence of Satyrids feeding at damp roadside patches and the building, especially as several *Euptychia* species were common in the forests at that time; one *Morpho* species which frequently

flew along the road, and Lycaenids which were scarce, were not observed at the building.

Two particular aspects of this phenomenon make it worthy of report and study. Firstly it is most unusual, if not unique, to witness so vast an assembly of butterflies at a cement structure; not far away were other concrete buildings, but no butterflies in attendance. Secondly, why this particular composition of species and absence of *Pieridae* and *Papilionidae*?

Scoble (1975) states that despite many observations, basic questions about butterflies feeding are still unknown, including precisely what substances are sought and what substances stimulate feeding. He suggests that from most substrates upon which they feed they derive a number of substances, and that different species probably have different requirements, and therefore the various species at damp sand may in fact be seeking different nutrients.

Many of the species attracted to the concrete are more often associated with rotting fruit or animal excreta, nevertheless, the vast majority also feed at the roadside puddles. Arms *et al.* (1974) using controlled experiments with feral *Papilio glaucus* L. found that anions such as phosphate, chloride and nitrate as such did not attract butterflies, and that visits were confined almost entirely to salts containing sodium ions. The main salt found at the surface of the concrete is calcium carbonate, but salts migrating to the surface also include sulphates of calcium, sodium and potassium. Therefore it appears that the food sought at this building and the damp gutter beside it was sodium ions derived from sodium sulphate, for extraneous contaminants such as bird or animal excreta, or solutions from rotting fruit, were certainly absent, and there were no overhanging trees. A further relevant observation in 1994 was the placing of a piece of black nylon fabric on the ground within the clearing, and in shade; within a few minutes it was covered with a score of *Hamadryas* intently feeding and reluctant to move on my approach. The material had been handled, and in the hot, humid conditions would have become contaminated with perspiration, ie sodium chloride solution.

It is most unfortunate that this building is within the bounds of the Iguazu National Park, for two intriguing questions must be left unanswered. Do Brassolids and other crepuscular species visit it at dusk and dawn, and is it an attraction to nocturnal moths?

Acknowledgement

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***Ectoedemia turbidella* (Zell.) (Lep.: Nepticulidae) at Castle Ashby, Northamptonshire**

On 15 November 1995 I found several hundred leaf-mines in fallen leaves of grey poplars at the estate access between Grendon Quarter Pond and Scotland Pond (grid reference SP 866601).

I collected leaves for further study, 46 having a single leaf-mine and ten having two leaf-mines. A further six leaves had an egg deposited on each side of the petiole but with only one larva surviving to the stage of making a blotch in the leaf-blade.

The eggs were deposited on the side of the petiole at the following distances from the leaf base:

| mm | 6 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | unclear |
|--------|---|----|----|----|----|----|----|----|---------|
| number | 1 | 11 | 14 | 12 | 18 | 11 | 5 | 1 | 5 |

Most of the leaves were kept outdoors over the winter and nine moths emerged between 4 May and 15 May 1996. These were confirmed as *Ectoedemia turbidella* by making genitalia slides.

In *The Moths and Butterflies of Great Britain and Ireland*, Volume 1, this species is recorded from VCs 18, 21 and 29. Maitland Emmet now has further records from VC 19, North Essex; VC 20, Hitchin (1985); VC 22, Faringdon (1976); VC 23, Oxford; VC 30, Stotfold (1986).— D.V. MANNING, 27 Glebe Rise, Sharnbrook, Bedford MK44 1JB.

Holly Blue *Celastrina argiolus* (L.) (Lep.: Lycaenidae) ovipositing on cherry laurel *Prunus laurocerasus* L.

On 31.v.1996 at Manor Wood, Rothamsted, Harpenden, Hertfordshire (TL 124132), I noticed that a number of individuals of *C. argiolus* were paying particular attention to shrubs of cherry laurel, which grow abundantly at the site. I followed one female which eventually alighted on a flowering spike of the plant and promptly laid an egg on a young fruit.

The first generation of *C. argiolus* lays its eggs mainly on Holly *Ilex aquifolium* L. but a number of other foodplants have been recorded including gorse *Ulex* spp., spindle *Euonymus europaeus* L., dogwood *Cornus* spp. and snowberry *Symphoricarpos* spp. (Thomas & Lewington, 1991, *The Butterflies of Britain and Ireland*, Dorling Kindersley, London). However, I can find no reference to the species using cherry laurel, or any other *Prunus* spp., as a foodplant.— IAN R. WYNNE, 151 Riverside Road, St. Albans, Hertfordshire AL1 1RZ.

BEETLES FROM PITFALL-TRAPPING AT HIGH ALTITUDE IN THE SCOTTISH HIGHLANDS

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THIS PAPER records beetles taken from traps operated in a range of montane habitats at three widely separated sites in the eastern, central and north-western Highlands. Some hand-collected species are also included. Similar studies are the recent work by Owen and Thaxton (1994) detailing captures from high altitude in the Cairngorms while Greenslade (1968) examined Carabids at a range of altitudes on two hills in Argyll.

The trapping was carried out: (1) on Meall a' Chrasgaidh, a summit in the Fannich Hills range (West Ross), (2) on the high-altitude plateau of Creag Meagaidh in the central Highlands (Inverness-shire) and (3) in Lurcher's Gully, a north-facing stream gully on the Cairngorms (Inverness-shire). The traps were pitfalls consisting of white plastic drinking cups, 9.5cm tall and 6.7cm in diameter with drain holes 3cm below the rim. The pitfalls were sunk in the ground with their rims flush with the ground surface, set 2m apart and filled up to the drain holes with 4% formalin solution to which were added a few drops of detergent. The latter facilitates capture by lowering the surface tension of the trapping fluid. The whole of the trapping covered the period from the end of May to the beginning of October, though the duration of trapping at any one site ranged from only 25 to 57 days.

The traps were operated in a range of representative montane habitats. On both Meall a' Chrasgaidh and Creag Meagaidh traps were operated in tufted-hair grass *Deschampsia cespitosa* grassland, mat-grass *Nardus stricta* grassland and woolly fringe-moss *Racomitrium lanuginosum* heath, which grows with three-leaved rush *Juncus trifidus* on Creag Meagaidh. On Creag Meagaidh traps were also operated in lichen-rich bilberry *Vaccinium myrtillus* heath. Two sets of traps were in operation on Creag Meagaidh in 1985, in mat-grass grassland and woolly-fringe moss heath at the same places as in 1983. In Lurcher's Gully the traps were operated in blanket bog with heather *Calluna vulgaris* and cotton-grasses *Eriophorum* spp., wet heath with heather and deer-grass *Trichophorum cespitosum*, tall heather heath, prostrate heather heath, mat-grass grassland, lichen-bilberry heath crowberry *Empetrum nigrum* heath with woolly fringe-moss, and a mossy spring. Six pitfalls were operated in each habitat. Table 1 provides further details of the trapping which was supplemented by short sessions of hand-collecting.

The numbers of each of the 112 species trapped and the percentage of the total are given in Table 1. The list is dominated by Carabids and Staphylinids with 26 and 57 species respectively. No other family has more

than five species. The catch on Creag Meagaidh in 1985 is much lower in species compared with 1983 which may be due to trapping at two instead of four trap sites, and possibly also to poor weather during the trapping period.

The results are presented more for the overall picture of the montane beetle fauna than for comparisons between sites. The latter are difficult to make because of differences in the range of habitat trapped, numbers of specimens caught and the length and dates of trapping. Half the species (56) were trapped on at least two of the sites, if the two lists from Creag Meagaidh are treated as one. These include most of the more frequently taken species. Many fewer species were taken on Meall a'Chrasgaidh and on Creag Meagaidh in 1985 than at the other two sites. The majority of the species taken on Meall a'Chrasgaidh and on Creag Meagaidh in 1985 were also taken at the other sites and the main difference between the species-poor and the species-rich catches was in the absence of species.

This study complements that of Owen and Thaxton (1994) by presenting the results of trapping at a series of trap sites in montane ground at lower altitudes than in their study. A wider range of species was taken (112 species as against 25 species) which is perhaps attributable to the less severe climatic conditions at the lower altitudes and wider range of habitats trapped overall. All the species taken by Owen and Thaxton (1994), with the exception of *Nebria nivalis* (Paykull) and *Corticaria linearis* (Paykull), were taken in traps in this study. Chiefly, the additional species taken in this study are eurytopic species that are found generally over a wide range of altitudes, though an additional eight montane species were also taken, to give 21 in total (Table 1).

Greenslade (1968) recorded only three species of Carabid (*Carabus problematicus*, *Nebria gyllenhali* and *Patrobus assimilis*) by hand-searching above 760m on Ben Cruachan and Beinn Eunaich. This compares with 26 species of Carabids taken above an altitude of 790m in this study.

Two of the species caught in traps, *Amara alpina* and *Stenus glacialis*, are listed as Red Data Book species (Hyman and Parsons 1992, 1994). Specimens of *A. alpina* were taken at six out of the nine trap sites in Lurcher's Gully. The numbers, given in brackets, taken at each trap site with the altitude of the site were: blanket mire at 575m (12), wet heath at 650m (26), tall heather heath at 740m (2), mat-grass grassland at 830m (4), prostrate heather heath at 885m (1) and mat-grass grassland at 980m (4). Adults were seen feeding on the seed heads of deer-grass between the two lower trap sites when the catch was emptied. Two specimens of *A. alpina* were taken by hand-searching in the Cairngorms in Gleann Einrich at an altitude of around 600m (grid ref. NH 9302) in wet heath with heather and deer-grass on 15 July 1986. On Creag Meagaidh *A. alpina* was only taken at the highest trap site at an altitude of 1000m in woolly fringe-moss heath.

Table 1. Site data and numbers of beetles trapped in each area and percentage of the area totals.

| | | |
|-----------------------------------|-------------------------------------|--------------------------------------|
| Name of hill or range | Fannich Hills Meall a'Chrasgaidh | Creag Meagaidh (1) An Cearcallach |
| O.S. grid refs. | NH1873 | NN4185, NN4286, NN4386 |
| Altitude (m) of trap sites | 853, 883, 900 | 790, 885, 975, 1000 |
| Dates of trapping | 7.vi. – 11.vii.1982 | 16.v. – 10.vii.1983 |
| No. of trap days | 792 | 1344 |
| Number of beetles trapped | 3587 | 2631 |
| Number of species trapped | 32 | 88 |

| | | |
|-----------------------------------|--------------------------------------|---|
| Name of hill or range | Creag Meagaidh (2) An Cearcallach | Cairngorms Lurcher's Gully |
| O.S. grid refs. | NN4286, NN4386 | NH9703, NH9704, NH9705 |
| Altitude (m) of trap sites | 975, 1000 | 575, 650, 740, 830, 885, 920, 975, 980 |
| Dates of trapping | 13.viii – 8.x.1985 | 28.v. – 21.vi.1988 |
| No. of trap days | 672 | 1200 |
| Number of beetles trapped | 317 | 1609 |
| Number of species trapped | 31 | 60 |

| Family/species | Status* | Fannich Hills | | Creag Meagaidh (1) 1983 | | Creag Meagaidh (2) 1985 | | Cairngorms (Lurcher's Gully) | |
|--|---------|---------------|-----|-------------------------|------|-------------------------|------|------------------------------|------|
| | | No. trapped | % | No. trapped | % | No. trapped | % | No. trapped | % |
| Carabidae | | | | | | | | | |
| <i>Cychrus [carabiodes (L.)]</i> | E | – | – | 4 | 0.2 | – | – | 1 | 0.1 |
| <i>s. rostratus (L.)</i> | | | | | | | | | |
| <i>Carabus [glabratus Paykull]</i> | M | – | – | 15 | 0.6 | – | – | – | – |
| <i>s. lapponicus Born</i> | | | | | | | | | |
| <i>C. [problematicus Herbst]</i> | E | 80 | 2.2 | 189 | 7.2 | 29 | 9.1 | 126 | 7.8 |
| <i>s. gallicus Gehin</i> | | | | | | | | | |
| <i>C. [violaceus L.]</i> | E | – | – | 11 | 0.4 | – | – | – | – |
| <i>v. sollicitans Hartert britannicus Born</i> | | | | | | | | | |
| <i>Nebria gyllenhalii (Schoenherr)</i> | M | 85 | 2.4 | 203 | 7.7 | 24 | 7.6 | 42 | 2.6 |
| <i>N. salina Fairmaire & Laboulbène</i> | E | – | – | – | – | 1 | 0.3 | – | – |
| <i>Notiophilous aquaticus (L.)</i> | E | – | – | – | – | – | – | 4 | 0.2 |
| <i>N. biguttatus (Fabr.)</i> | E | – | – | 12 | 0.5 | – | – | 6 | 0.4 |
| <i>N. germيني Fauvel</i> | E | 8 | 0.2 | 16 | 0.6 | 2 | 0.6 | 29 | 1.8 |
| <i>Elaphrus cupreus Duftschmid</i> | E | – | – | – | – | – | – | 3 | 0.2 |
| <i>Loricera pilicornis (Fabr.)</i> | E | – | – | 6 | 0.2 | – | – | 35 | 2.2 |
| <i>Miscodera arctica (Paykull)</i> | E | – | – | 6 | 0.2 | 7 | 2.2 | 1 | 0.1 |
| <i>Patrobus assimilis Chaudoir</i> | M | 83 | 2.3 | 175 | 6.7 | 13 | 4.1 | 146 | 9.1 |
| <i>P. septentrionis (Dejean)</i> | M | – | – | 22 | 0.8 | – | – | 228 | 14.2 |
| <i>Trechus obtusus Erichson</i> | E | 3 | 0.1 | – | – | – | – | 34 | 2.1 |
| <i>Pterostichus adstrictus Eschscholtz</i> | E | – | – | 5 | 0.2 | 1 | 0.3 | – | – |
| <i>P. diligens (Sturm)</i> | E | – | – | 2 | 0.1 | – | – | 1 | 0.1 |
| <i>P. nigrita (Paykull)</i> | E | – | – | 1 | <0.1 | – | – | 3 | 0.2 |
| <i>Calathus melanocephalus (L.)</i> | E | – | – | 59 | 2.2 | 63 | 19.9 | 179 | 11.1 |
| <i>Amara aenea (Degeer)</i> | E | – | – | – | – | 1 | 0.3 | – | – |
| <i>A. alpina (Paykull)</i> | M | – | – | – | – | 4 | 1.3 | 49 | 3.0 |
| <i>A. lunicollis Schiödte</i> | E | – | – | 3 | 0.1 | – | – | 1 | 0.1 |
| <i>Harpalus latus (L.)</i> | E | – | – | 6 | 0.2 | – | – | – | – |

| | | | | | | | | | |
|--|---|-----|------|----|------|----|------|-----|------|
| <i>Trichocellus cognatus</i> (Gyllenhal) | E | — | — | 4 | 0.2 | — | — | 3 | 0.2 |
| <i>Bradycellus ruficollis</i> (Stephens) | E | — | — | 1 | <0.1 | — | — | 4 | 0.2 |
| <i>Cymindis vaporariorum</i> (L.) | M | — | — | — | — | — | — | 5 | 0.3 |
| Hydrophilidae | | | | | | | | | |
| <i>Cercyon atomarius</i> (Fabr.) | E | — | — | 1 | <0.1 | — | — | — | — |
| <i>Megasternum obscurum</i> (Marshall) | E | — | — | 4 | 0.2 | — | — | 1 | 0.1 |
| Leiodidae | | | | | | | | | |
| <i>Agathidium seminulum</i> (L.) | E | — | — | — | — | — | — | 1 | 0.1 |
| <i>Choleva agilis</i> (Illiger) | E | — | — | 1 | <0.1 | — | — | 3 | 0.2 |
| <i>C. glauca</i> Britten | E | — | — | 3 | 0.1 | — | — | — | — |
| Staphylinidae | | | | | | | | | |
| <i>Anthobium unicolor</i> (Marshall) | E | — | — | 2 | 0.1 | — | — | 5 | 0.3 |
| <i>Olophrum piceum</i> (Gyllenhal) | E | — | — | 4 | 0.2 | 1 | 0.3 | 1 | 0.1 |
| <i>Arpedium brachypterum</i> (Gravenhorst) | M | 519 | 14.5 | 18 | 0.7 | 4 | 1.3 | 56 | 3.5 |
| <i>Acidota crenata</i> (Fabr.) | E | — | — | 3 | 0.1 | 11 | 3.5 | — | — |
| <i>Lesteva monticola</i> Kies. | M | 306 | 8.5 | 4 | 0.2 | — | — | 5 | 0.3 |
| <i>Geodromicus longipes</i> (Mannerheim) | M | — | — | 29 | 1.1 | 39 | 12.3 | — | — |
| <i>Anthophagus alpinus</i> (Paykull) | M | 19 | 0.5 | 10 | 0.4 | 2 | 0.6 | 9 | 0.6 |
| <i>Eusphalerum minutum</i> (Fabr.) | E | — | — | 2 | 0.1 | — | — | 1 | 0.1 |
| <i>Eudectus whitei</i> Sharp | M | 1 | <0.1 | 4 | 0.2 | — | — | — | — |
| <i>Syntomium aeneum</i> (Müller, P.W.J.) | E | — | — | — | — | — | — | 2 | 0.1 |
| <i>Anotylus rugosus</i> (Fabr.) | E | — | — | — | — | — | — | 1 | 0.1 |
| <i>Oxytelus laqueatus</i> (Marshall) | E | 1 | <0.1 | 3 | 0.1 | — | — | — | — |
| <i>Stenus brevipennis</i> Thompson, C.G. | E | — | — | 2 | 0.1 | — | — | 2 | 0.1 |
| <i>S. brunnipes</i> Stephens | E | — | — | 7 | 0.3 | — | — | — | — |
| <i>S. geniculatus</i> Grav. | E | 1 | <0.1 | — | — | — | — | — | — |
| <i>S. glacialis</i> Heer | M | 1 | <0.1 | — | — | 1 | 0.3 | — | — |
| <i>S. impressus</i> Germar | E | — | — | 1 | <0.1 | — | — | 3 | 0.2 |
| <i>Lathrobium brunnipes</i> (Fabr.) | E | — | — | — | — | — | — | 2 | 0.1 |
| <i>L. fulvipenne</i> (Grav.) | E | — | — | 4 | 0.2 | — | — | — | — |
| <i>Othius angustus</i> Stephens | E | 2 | 0.1 | 16 | 0.6 | 1 | 0.3 | 8 | 0.5 |
| <i>O. punctulatus</i> (Goeze) | E | — | — | 1 | <0.1 | — | — | — | — |
| <i>Philonthus laminatus</i> (Creutzer) | E | — | — | 1 | <0.1 | — | — | — | — |
| <i>Quedius boopoides</i> Munster | E | 2 | 0.1 | 4 | 0.2 | 6 | 1.9 | 13 | 0.8 |
| <i>Q. boops</i> (Grav.) | E | — | — | 4 | 0.2 | — | — | — | — |
| <i>Q. fulvicollis</i> (Stephens) | E | — | — | 5 | 0.2 | — | — | 2 | 0.1 |
| <i>Q. molochinus</i> (Gravenhorst) | E | 55 | 1.5 | 68 | 2.6 | 5 | 1.6 | 193 | 12.0 |
| <i>Q. nitipennis</i> (Stephens) | E | — | — | 8 | 0.3 | — | — | — | — |
| <i>Q. schatzmayri</i> Gridelli | E | — | — | 1 | <0.1 | — | — | — | — |
| <i>Q. umbrinus</i> Erichson | E | 1 | <0.1 | — | — | — | — | — | — |
| <i>Mycetoporus angularis</i> Mulsant & Rey | E | 4 | 0.1 | 13 | 0.5 | — | — | — | — |
| <i>M. baudueri</i> Mulsant & Rey | E | 3 | 0.1 | 68 | 2.6 | 20 | 6.3 | 3 | 0.2 |
| <i>M. clavicornis</i> (Stephens) | E | — | — | — | — | — | — | 1 | 0.1 |
| <i>M. lepidus</i> (Grav.) | E | 1 | <0.1 | 9 | 0.3 | — | — | — | — |
| <i>M. rufescens</i> (Stephens) | E | — | — | 2 | 0.1 | — | — | 1 | 0.1 |
| <i>Bryoporus rugipennis</i> Pandellé | M | 3 | 0.1 | 2 | 0.1 | — | — | — | — |
| <i>Bolitobius inclinans</i> (Grav.) | E | — | — | — | — | — | — | 1 | 0.1 |
| <i>Tachyporus chrysomelinus</i> (L.) | E | — | — | 7 | 0.3 | — | — | — | — |
| <i>Tachinus elongatus</i> Gyllenhal | E | — | — | 3 | 0.1 | — | — | 23 | 1.4 |
| <i>T. marginellus</i> (L.) | E | — | — | 1 | <0.1 | — | — | — | — |
| <i>T. proximus</i> Kraatz | E | — | — | 5 | 0.2 | — | — | — | — |
| <i>T. signatus</i> Grav. | E | 4 | 0.1 | — | — | — | — | — | — |
| <i>Boreophilia islandica</i> (Kraatz) | M | — | — | 1 | <0.1 | — | — | 4 | 0.2 |
| <i>Aloconota gregaria</i> (Erichson) | E | — | — | — | — | — | — | 2 | 0.1 |
| <i>Alaobia scapularis</i> (Sahlberg, C.R.) | E | — | — | — | — | 1 | 0.3 | — | — |
| <i>Geostiba circellaris</i> (Grav.) | E | — | — | — | — | 2 | 0.6 | 1 | 0.1 |
| <i>Liogluta nitidiuscula</i> (Sharp) | M | 7 | 0.2 | 3 | 0.1 | 11 | 3.5 | — | — |

| | | | | | | | | | |
|--|---|-------------|------|-------------|------|------------|-----|-------------|------|
| <i>Atheta arctica</i> (Thomson, C.G.) | M | 1 | <0.1 | 10 | 0.4 | — | — | 28 | 1.7 |
| <i>A. tibialis</i> (Heer) | M | 2349 | 65.5 | 546 | 20.8 | 21 | 6.6 | 191 | 11.9 |
| <i>A. celata</i> (Erichson) | E | — | — | 1 | <0.1 | — | — | — | — |
| <i>A. brunneipennis</i> (Thomson, C.G.) | E | — | — | 5 | 0.2 | — | — | — | — |
| <i>Mniusa incrassata</i> (Mulsant & Rey) | E | — | — | 40 | 1.5 | — | — | 20 | 1.2 |
| <i>Oxypoda elongatula</i> Aubé | E | — | — | 4 | 0.2 | — | — | — | — |
| <i>O. nigricornis</i> Motschulsky | E | — | — | — | — | — | — | 1 | 0.1 |
| <i>O. procerula</i> (Mannerheim) | E | — | — | 1 | <0.1 | — | — | 2 | 0.1 |
| <i>O. tirolensis</i> Gredler | M | 1 | <0.1 | 35 | 1.3 | — | — | 13 | 0.8 |
| <i>Aleochara bipustulata</i> (L.) | E | — | — | 1 | <0.1 | — | — | — | — |
| <i>A. lanuginosa</i> Grav. | E | — | — | — | — | — | — | 1 | 0.1 |
| Pselaphidae | | | | | | | | | |
| <i>Bythinus burrelli</i> (Denny) | E | — | — | 2 | 0.1 | — | — | — | — |
| Geotrupidae | | | | | | | | | |
| <i>Geotrupes stercorarius</i> (L.) | E | — | — | 5 | 0.2 | — | — | — | — |
| Scarabaeidae | | | | | | | | | |
| <i>Aphodius borealis</i> Gyllenhal | E | — | — | 1 | <0.1 | — | — | — | — |
| <i>A. depressus</i> (Kugelann) | E | — | — | 69 | 2.6 | — | — | — | — |
| <i>A. lapponum</i> Gyllenhal | M | — | — | 49 | 1.9 | — | — | — | — |
| Byrrhidae | | | | | | | | | |
| <i>Simplocaria semistriata</i> (Fabr.) | E | — | — | 1 | <0.1 | — | — | — | — |
| <i>Byrrhus arietinus</i> (Fabr.) | E | — | — | 2 | 0.1 | — | — | 2 | 0.1 |
| <i>B. fasciatus</i> (Forster) | E | 3 | 0.1 | 62 | 2.4 | 3 | 0.9 | 10 | 0.6 |
| <i>B. pilula</i> (L.) | E | 3 | 0.1 | 76 | 2.9 | 1 | 0.3 | 30 | 1.9 |
| Elateridae | | | | | | | | | |
| <i>Hypnoidus riparius</i> (Fabr.) | E | 29 | 0.8 | 162 | 6.2 | 9 | 2.8 | — | — |
| <i>Ctenicera cuprea</i> (Fabr.) | E | — | — | 46 | 1.8 | — | — | 2 | 0.1 |
| Cantharidae | | | | | | | | | |
| <i>Rhagonycha femoralis</i> (Brullé) | E | — | — | 3 | 0.1 | — | — | — | — |
| <i>Malthodes pumilus</i> (Brébisson) | E | — | — | 1 | <0.1 | — | — | — | — |
| Nitidulidae | | | | | | | | | |
| <i>Meligethes aeneus</i> (Fabr.) | E | — | — | — | — | — | — | 2 | 0.1 |
| Rhizophagidae | | | | | | | | | |
| <i>Rhizophagus dispar</i> (Paykull) | L | — | — | 1 | <0.1 | — | — | — | — |
| <i>Monotoma longicollis</i> Gyllenhal | E | 1 | <0.1 | — | — | — | — | — | — |
| Cryptophagidae | | | | | | | | | |
| <i>Antherophagus pallens</i> (L.) | E | — | — | — | — | 1 | 0.3 | — | — |
| Chrysomelidae | | | | | | | | | |
| <i>Chrysolina staphylaea</i> (L.) | E | — | — | 1 | <0.1 | — | — | — | — |
| Apionidae | | | | | | | | | |
| <i>Apion cruentatum</i> Walton, J. | E | — | — | 8 | 0.3 | — | — | — | — |
| Curculionidae | | | | | | | | | |
| <i>Otiorhynchus arcticus</i> (Fabricius, O.) | M | 2 | 0.1 | 265 | 10.1 | 26 | 8.2 | 54 | 3.4 |
| <i>O. nodosus</i> (Müller, O.F.) | M | 6 | 0.2 | 12 | 4.3 | 6 | 1.9 | 9 | 0.6 |
| <i>Hylobius abietis</i> (L.) | L | — | — | 1 | <0.1 | — | — | — | — |
| <i>Notaris acridulus</i> (L.) | E | 3 | 0.1 | 51 | 1.9 | 1 | 0.3 | — | — |
| <i>Micrelus ericae</i> (Gyllenhal) | L | — | — | 6 | 0.2 | — | — | — | — |
| Total numbers caught | | 3587 | | 2631 | | 317 | | 1609 | |

Status codes: E = eurytopic species; L = lowland species; M = montane species.

Owen and Thaxton (1994) trapped a single specimen of *A. alpina* at an altitude of 980m. They also give details of earlier records. The collections of the Royal Scottish Museum (RSM) and the Scottish Insects Record Index (SIRI) show that the species is known from four areas, discounting the suspect record from Rona by Harrison (1935). These are Rannoch (Meall Garbh), Aviemore (Cairn Gorm), Braemar and Blair Atholl. None of these records give any precise details of capture. One published record (Evans 1899), not listed in SIRI, is from an altitude of 1700 ft. (520m) on a hill a few miles up Glen Tilt near Blair Atholl. The two specimens on which the record is based are in the RSM, and the Blair Atholl specimens assumed by Owen and Thaxton (1994) to have been taken from high altitude are presumably the same. The captures in Lurcher's Gully in this study, coupled with previous records, show that *A. alpina* has a wide altitudinal range from around as low as 500-600m up to about 1000m. The data from Lurcher's Gully also indicate that the species is more frequent at low altitude, at least on the northern slopes of the Cairngorms. Further, the species was taken in largest numbers in blanket mire and wet heath with abundant deer-grass, on which the adult was observed to feed. Deer-grass also occurs, but less abundantly, among the mat-grass at altitudes of 830m and 980m where the species was taken in small numbers. At the capture sites at high altitude on Creag Meagaidh and on A'Choinneach (Owen and Thaxton 1994), where deer-grass is absent, three-leaved rush may provide an alternative food source for adults.

The record of *A. alpina* from Creag Meagaidh extends the known range to West Inverness-shire.

The captures of *S. glacialis* on both Meall a'Chrasgaidh and Creag Meagaidh were in woolly fringe-moss heath at altitudes of 900m and 1000m respectively. This species is known from only five vice-counties according to Hyman and Parsons (1994), but records are widely distributed from North Northumberland to Fife and the Highlands.

Two other montane species were taken by hand-collecting on the Fannich Hills. A single specimen of *N. nivalis* was taken on a rocky slope below the summit of Sgurr Mor (grid ref. NH 205716), at an altitude of 950m on 25 June 1987. On the same day four males of *Phyllodecta polaris* Schneider were taken on the summit of Sgurr Mor (grid ref. NH 203716) at an altitude of 1050m. They were taken in woolly fringe-moss heath with an abundance of small herbs such as alpine bistort *Polygonum viviparum*, and least willow *Salix herbacea*. The latter is known to be the foodplant of *P. polaris* (Owen, 1988a). Graham Dalby gave me a single male *P. polaris* taken the following day on the neighbouring summit of Sgurr nan Clach Gaela (grid ref. NH 188719), at an altitude of 920m. An examination of the capture site showed that the vegetation was similar to that on Sgurr Mor.

N. nivalis was formerly regarded as a rare species from high altitude but is now known from 13 vice-counties in the eastern, northern and western

Highlands, Ebudes, Shetland, England and Wales (Hyman and Parsons 1992). *P. polaris* was first reported in Britain by Morris (1970), and was first found on Sgurr Mor by Owen (1983). The species is currently known from four vice-counties, all in the Highlands (Hyman & Parsons 1992).

Another species, *Eudectus whitei*, was formerly thought to be rare but is now known from about 20 sites in Scotland and northern England (Owen, 1988b; Owen and Thaxton, 1994). The species was captured on Meall a'Chrasgaidh in woolly fringe-moss heath at an altitude of 883m. On Creag Meagaidh the species was caught in tufted-hair grass grassland, bilberry-lichen heath and woolly fringe-moss heath. *E. whitei* was also caught on Creag Meagaidh in 1985, though lower down the trap transect than reported in this paper, at an altitude of only 620m, in bilberry heath.

Three of the species caught on Creag Meagaidh (*Rhizophagus dispar*, *Hylobius abietis* and *Macrelus ericae*) are lowland species out of place at high altitude. *R. dispar* is found under bark and on bark fungus (Peacock, 1977). *H. abietis* feeds on *Pinus* and *Picea* spp. and *M. ericae* feeds on *Calluna vulgaris* and *Erica* spp. (Bullock, 1992). Birch, pine and spruce woods grow on the lower slopes two to three kilometres from the trap sites. *C. vulgaris* mixed with *Erica* spp. is frequent on the lower slopes below the traps sites, up to an altitude of about 600m.

In conclusion this study shows that there is a richer beetle fauna on montane ground at 575-1000m altitude compared with that known from very high altitude at 980-1300m (Owen and Thaxton, 1994). This study confirms the latter study in showing that a large part of the fauna (79%, Table 1) is made up of widely distributed eurytopic species.

Acknowledgements

I am grateful to Colin Welch for identification of some of the Staphylinid species. Graham Rotheray kindly provided access to the collections and the Scottish Insects Records Index at the Royal Museum of Scotland.

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Channel Islands fauna is not “British”

I would emphatically support Clive Simpson's contention in his note under this heading (*Ent. Rec.* **108**: 210), in which he sets out the case with unerring cogency. There is simply no escaping the fact that the Britannic area is a geographic and faunistic unity and that the Channel Islands are not part of it – however much this may offend patriotic susceptibilities in some quarters. Devotees of other orders than Lepidoptera are not entirely free of fallacy, but at least coleopterists have never, I think, been seriously tempted in that direction. Geography and politics are two different things and should not be confused: the one is natural and for practical purposes stable, the other artificial and liable to change. Suppose, for argument's sake, that Scotland were to secede from the UK in the near future – unlikely perhaps but not unthinkable. Would the “Channel Island moths are British” faction then act logically and reduce the “British List” accordingly? I doubt it.— A.A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

A record of *Hipparchia semele* (L.) (Lep.: Satyrinae) for Grassholm Island, Wales

Hipparchia semele was observed on Grassholm Island (grid reference SR51) on 22.vii.1996 by Mr Graham Thompson, warden of Skokholm, who has kindly passed the record on to me. This raises the number of species observed on the island to six, the other being: *Pieris brassicae*, *P. rapae**, *Vanessa atalanta**, *Cynthia cardui* and *Aglais urticae**. Three of the records, marked with an asterisk, predate 1960. *C. cardui* has been recorded in 1996, on 26.vi. by Ian Bullock (from RSPB) at St. Davids amid the substantial migration of this butterfly throughout Britain. Unfortunately the record of *H. semele* has arrived too late to entered into *The butterflies of British and Irish offshore islands* (Gem Publishing Company, Wallingford, Oxon) to be published shortly.— R.L.H. DENNIS, 4 Fairfax Drive, Wilmslow, Cheshire SK9 6EY.

MASS HILLTOPPING OF EARWIGS ON THE TROODOS SUMMIT IN CYPRUS (DERMAPTERA)

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Introduction

ON 23 OCTOBER 1994 I stopped briefly at the very summit of the Troodos Mountains (c.2000m) from where, on a good day all of Cyprus can be seen. It was obviously too late in the season to hope for any interesting hilltopping butterflies (during four days on the island only *Iphiclides podalirius* L., *Artogeia rapae* L., *Gonepteryx rhamni* L., and *Pararge aegeria* L. were seen). But on reaching the summit, it was found to be full of smaller hilltopping insects, notably a small red ladybird (Coleoptera, Coccinellidae), a small grey stinking bug (Hemiptera), and an earwig (*Forficula lurida* Fischer - a common species centered on Turkey).

Observations on the Troodos Summit

The weather on the day in question was one of hazy sunshine with an air temperature of about 22° Celsius at 2000m. The wind was so fresh that the possibility of small insects hilltopping seemed remote, but the summit was crowded with them, and especially with both sexes of the earwig.

They were seated on south-facing rocks, paths, and roads all over the summit area, and on the cement observation platform, often in little clusters of two to five, but not touching each other. Every so often, an individual would suddenly, and unprovoked, fly off for a couple of small circles and land again in a rather ungainly manner.

I seem to remember reading a book on insects where the author doubted whether earwigs ever flew spontaneously under normal circumstances. These ones certainly did. During the twenty minutes spent on the peak at least fifty take-offs were personally witnessed. Mostly take-off was too fast to see what happened, as was the folding of the wings after the ungainly landings. Only in two cases were the unfolding of their remarkably hinged and folded wings actually witnessed. The flight seemed surprisingly confident, able to withstand the strong wind. At any given time hundreds of earwigs were airborne on the summit.

When not flying, the earwigs generally sat still in the sun, not touching, and not interacting with each other. In one case, only, a pair was seen seated side by side, the male of which had unfolded the wing furthest from the female and appeared to be grooming it with the anal tongs. After a while, he folded the single wing, and then flew away abruptly.

Six individuals were caught by grasping their tongs, in the hope of showing to my companions how the unfolding of the wings looked, but they did not oblige. Immediately on being placed back in their original position, they scuttled off into a dark crevice as earwigs normally do.

Every suitable rock or flat area which the sun reached had several earwigs per square metre. The investigated area covered at least 100 x 100m (10,000m²), but there must have been earwigs over a larger area than that. A total of 5,000 is an absolute minimum, but the true total must have been considerably higher than that. I made no formal count, but the sex-ratio appeared to be roughly 1:1, the sexes being easily distinguished by the shape of the anal tongs.

Discussion

Hilltopping of this nature is normally seen as a way of allowing the sexes of a species to meet for mating purposes, and this has been carefully documented for both butterflies (Lepidoptera, Rhopalocera) and hoverflies (Diptera, Syrphidae). This may have been so also in the present case; my brief stay was possibly too short to see examples of sexual behaviour.

Another possibility is that the hilltopping constitutes a prelude to communal hibernation. Ladybirds of the type seen are notorious for communal roosting, and often in places where they do not normally live and feed. Many of the small stinking bugs were seen further down the mountain in shady places in very large numbers (more than 100 under the palm-sized ledge of a small rock).

However, a conversation with Judith Marshall on the habits of earwigs in the UK, suggests that both mechanisms may actually be combined, since here females are impregnated in the autumn and hibernate to lay eggs the following spring, while the males die off.

Whatever the reason, the fact remains that the earwigs were hilltopping, that they flew frequently, spontaneously, and quite strongly, and that they were present by the thousands or tens of thousand.

Acknowledgements

My wife, Nancy Fee, and I would like to thank Christos and Stavroulla Demetriou for taking us on the lovely trip through the Troodos where these observations were made. The earwig was kindly determined by Judith Marshall of the Natural History Museum, London.

Pyrausta aurata Scop. (Lep.: Pyralidae) on Wanstead Flats, east London, 1996

I first became aware of the existence of this Pyrale in east London in October 1994, having found larvae on a small cluster of *Mentha* growing in a tiny Plaistow garden on 8.x.1994.

A Heath trap set up on 30.v.1996 on Wanstead Flats, resulted in the capture of a single male. Subsequent examples of the moth, the first

4.vi.1996, were found flying in sunshine in my untidy garden by Wanstead Flats, which was graced by a small batch of mint in one corner. An initial female was seen in the vicinity of the aforementioned plants on 5.vi.1996, flying at 12.30 hours, depositing a single ovum on the underside of a mint leaf near the mid-rib. Other examples were seen on 9.vi.1996, 15.vi.1996 and 20.iv.1996, generally flying in the sunshine around midday. Larvae of various stadia were first noted on mint, 20.vi.1996. Larvae were seen to be relatively abundant on 14.vii.1996, always on the same few mint plants, feeding in close proximity to each other, spinning webs on the terminal shoots.

A single example of *P. aurata* was also seen in nearby West Ham Park on 15.v.1996, flying in close proximity to the mints which formed part of the herb garden. No larvae were seen here.

Larvae were fully-grown on 19.vii.1996, the last being noted on 27.vii.1996, and imagines were seen flying until 18.viii.1996, their numbers being added to by those specimens released into the garden from 27.vii.1996.

The diurnal nature of the insect, and its propensity to fly in bright sunshine, was no doubt encouraged by the favourable weather conditions of June and July (see Table).

| month | deviation 30 - year norms °C, 1951-1980 | sunshine % deviation, 30-year norms |
|-----------|---|-------------------------------------|
| June 1996 | +0.8°C | 119% |
| July 1996 | +0.8°C | 112% |

– G.E. KING, cl. Luis López Allúe, 2-7°A, 50005 Zaragoza, Spain.

Fletcher's Pug versus Pauper Pug

I fear that Bernard Skinner had his tongue firmly in his cheek when he wrote on this matter (*Ent. Rec.* **108**: 284-285); he knows better than most that Heslop's use of the name Pauper Pug for *egenaria* related absolutely to last century mis-identifications of similar species and that such a name had no place in the British literature. Moths of *Eupithecia egenaria* H.-S. were recognised for the first time in Britain from wild populations in 1962, and the significance of the two vernacular names was not lost on Robin Mere (1962, *Ent. Gaz.* **13**: 155), and I re-stated this position (1981, *Larvae Brit. Lep. not figd. by Buckler*: 34) and summarised it again in the recent Newsletter no. 49 of the Norfolk Moth Survey Group (which three sources I recommend to interested readers).

We had all been seduced since 1984 by the alliterative ease with which Pauper Pug popped from the tongue; and the fact that successive authors

since that time have followed that unsubstantiated name cannot in any way justify its validity. Use of Fletcher's name deliberately honours the name of D.S. Fletcher whose national and international work on the Geometridae spanned many years, and whose name was chosen to commemorate that recognition in the name of a moth newly added to the British fauna. And we might remember that its use perpetuates the memory also of Robin Mere, one of a distinguished band of Lepidopterists of the post-war years and to whom we also pay tribute.

There is no case for a populist vote on the matter because it is not just a question of like or preference, as it might be for the species that Bernard Skinner lists and to which could be added legions more; for in the case of *egenaria* the use of the name of Fletcher's Pug distinguishes between the clear genuine records of this century and the confused, unsubstantiated references of the last century.

We should not forget in all this that *egenaria* had actually been found in 1953 by John Fenn at Thetford but not recognised then as this species; so Mere's name of Fletcher's Pug still remained the earliest.

The usual clarity of mind of the author of *Colour Identification Guide to the Moths of the British Isles* will surely prevail in the choice of Fletcher's Pug in further revision of that book.— G.M. HAGGETT, Meadows End, Northacre, Caston, Norfolk NR17 1DG.

Is *Rhizophagus oblongocollis* Blatch & Horner (Col.: Rhizophagidae) basically a subterranean species?

As part of a survey of beetles living beneath the surface of the soil, an underground pitfall trap (Owen, 1995, *Ent. Rec.* **107**: 225-228) was set at the base of an old oak tree on Ashted Common NNR in November 1995. Among the beetles trapped between March 1996 and July 1996 were 14 examples of *Rhizophagus oblongocollis*. The only other Ashted record for this beetle known to me is for a single specimen which I found in April 1979 by sieving leaf-mould from the base of an old oak sited about 150 metres from where the trap was set.

In Britain, *R. oblongocollis* is known from only a few old parklands and is remarkable for its erratic appearances. For example, it was first taken (then new to science) in Sherwood Forest around 1892 (Blatch & Horner, 1892, *Ent. mon. Mag.* **28**: 303) but it has not been found there since; it was found in Richmond Park in 1896 (Peacock, 1997, *Hnbk. Id. br. Ins.* V pt 5a) but, similarly, it has not been seen there again in spite of the entomological interest which has been taken in the park over the years including an intensive survey carried out recently (Hammond & Owen, *in press*); it has been taken in Epping Forest (Forster, 1954, *Ent. mon. Mag.* **91**: 6) but only once. Only at Windsor has the beetle been recorded on a number of

occasions (e.g. Donisthorpe, 1937, *Ent. mon. Mag.* **73**: 244; Allen, 1942, *Ent. mon. Mag.* **78**: 152-154 but none of these were before 1937 or after 1972.

Its occurrence at Ashted in leaf mould and in a subterranean pitfall trap and its erratic appearances in well-worked, old parklands suggests, perhaps, that *R. olongicollis* is basically a subterranean species appearing above ground only in exceptional circumstances. Like its congener *R. parallelocollis* Gyllenhal, a species with well-documented subterranean habits, *R. oblongicollis* has small eyes which further suggests a subterranean lifestyle, as my friend Colin Johnson has pointed out to me. The trap on Ashted Common was set as close as possible to the trunk of the oak tree. The trap reached to a depth of about 25 cm and was almost certainly in contact with large roots. There was, in addition, an old burrow under the tree and the trap may, in part, have protruded into the burrow.

I thank Mr R. Warnock, Corporation of London for permission to study beetles on Ashted Common, NNR, Miss V. Forbes for help in setting traps there and Mr Colin Johnson for confirming the identification of examples of the beetle.— J.A. OWEN, 8 Kingsdown Road, Epsom, Surrey KT17 3PU.

Little-known entomological literature – *Nature Study* and *Naturalists' Journal* – a correction

Having just completed cataloguing the serial publications in the library of the British Entomological and Natural History Society (BENHS) I was interested to see Brian Gardiner's note concerning the *Naturalists' Journal* and its successor *Nature Study* (*Ent. Rec.* **108**: 216-219). I was surprised, therefore, to find that in the BENHS library there are three volumes of *Nature Study* rather than the single 1903 volume mentioned by Gardiner. The 1903 volume was published as *Nature Study* and without a volume number; it was followed by the 1904 volume published as *Nature Study and the Naturalists' Journal* and which, as volume 13, reverted to the sequence of volume numbers of its predecessor the *Naturalists' Journal*. The final volume was published in 1905 as volume 14 and retained the 1904 title. All three volumes of *Nature Study* were published by Charles Moseley. Volumes 13 and 14 have much the same entomological content as the earlier volumes but with rather more in Volume 14 than in Volume 13.

I understand that Brian Gardiner's error arose because he relied on the 1975 catalogue of serial publications in the Natural History Museum (Gardiner, *pers. comm.*) which lists only one volume for *Nature Study*. The correct publication history, as given above, may be found in the *World List of Scientific Publications 1900-1960, 4th edition, Vol. 2* (1964).— JOHN MUGGLETON, 30 Penton Road, Staines, Middlesex TW18 2LD.

Hazards of butterfly collecting – Jos Plateau, Nigeria – February 1978

The Jos Plateau in Central Nigeria, despite intense environmental degradation, remains a most interesting place. Because of its appreciable altitude in otherwise lowland West Africa, it represents the westernmost bastion of fauna and flora otherwise more characteristic of eastern and southern Africa. Here I have found the westernmost colonies of butterflies like *Eronia leda* Boisduval, *Colotis protomedia* Klug, *Euchrysops subpallida*, and *Cacyreus virilis* Aurivillius. Stuart Norman did even better in finding *Hypolycaena hatita* Hewitson in a subspecies near the eastern ssp. *ugandae* Sharpe (ssp. *anara* Larsen, 1986), though the nominate West African subspecies occurs a few hundred kilometres to the south – to my mind an excellent illustration that the subspecies category is a real and important one. Stuart Norman also found a splendid member of the genus *Capys* Hewitson which remains undescribed; its *Protea* host plants also have their westernmost limit at Jos.

So even a brief visit was to be cherished, and I arranged to spend most of a Sunday in Jos, rather than sweating it out in Lagos. An uneventful early morning flight with “Skypower” (Nigeria Airways) – most unusual since Skypower is usually full of surprises – brought me to Jos, and I immediately set out on foot from the hotel to collect. Very soon, I had bagged a good series of whites of the Pierid genus, *Mylothris* Hb., the taxonomic position of which had remained somewhat elusive, and which in principle should not be in Jos at all, since it is a rainforest genus. One or two other goodies were also bagged, before I had to repair to the hotel for a meeting with other members of my team who arrived on the afternoon plane (after having sweated it out in Lagos).

Later that evening, I discovered that I had two distinct species of *Mylothris*, one of which proved to be an undescribed subspecies of *Mylothris rueppelli* Koch, previously thought to go no further west than eastern Zaire and Uganda. I described this as *M. rueppelli josi* (1983 (1986) *Bulletin de l'Institut Fondamental d'Afrique Noire*, **A45**: 151-172), though strange to say I am still unsure of the exact taxonomic status of the one originally known from Jos. Not bad for a few hours' work.

Since my discovery of *Mylothris rueppelli josi*, Steve Collins from Nairobi upped me considerably. A few years ago, on a walk through the rocky hills a few hundred yards from the hotel, he came across a colony of a completely new member of the genus *Alaena* Boisduval, no species of which are known closer to Nigeria than the Zaire/Rwanda border.

On my way back, after a few days of work, “Skypower” had reverted to par. The ancient Fokker Friendship was hopelessly overbooked, the selling of additional boarding being a more secure source of income for airline staff than their salary, which the debt-ridden airline paid only irregularly. Being well-practiced in the ways of Skypower, I had spotted that the rear cargo

door was open, so when the ugly rush for the aircraft began, I vaulted up that instead of the main door, brandishing my boarding card.

The aircraft was soon filled to the last seat, and staff had great difficulties in fending off the twenty or so people with valid boarding passes still waiting. A bit of help from police and army soon sorted that out. Ready for take-off? Not quite! A flight attendant approached the aisle passengers in the last row to inform them that they would have to leave – the seats were reserved for cabin crew during take-off and landing. No response. Soon the captain came on the intercom, “Ladies and gentleman . . . I am afraid that due to international regulations the cabin crew have to be seated during take-off . . . would the passengers in seats 12b and 12c kindly leave the aircraft”. They sat tight. The captain came to remonstrate. They were disinclined to listen. Back came the captain on the intercom, “Unless the passengers in seats 12b and 12c leave the aircraft immediately, I have no option but to call the authorities. Please leave the aircraft voluntarily”. The poker faces in 12b and 12c set even deeper, the rest of us trying to suppress any trace of smugness.

A few moments later a squad of special police burst in with submachine guns and bundled off the recalcitrant passengers, who were at least wise enough not to resist. Soon the flight attendant was on the intercom “Ladies and gentleman. Welcome on board this Nigeria Airways Fokker Friendship bound for Kaduna, Ibadan and Lagos. Our cruising altitude will be at 21,000 feet. The estimated flying time to Kaduna is 55 minutes. We wish you a pleasant flight”. Stoic lass – I don’t think I could have resisted a slight change of script, “I hope those of you who are still with us have a pleasant flight”!

Ironically, in Kano a week later, I was faced with the opposite situation. a small Fokker F-28 had been replaced by a DC-10, seating four times the number of passengers. Sixty passengers, clutching mounds of luggage (sensibly refraining from placing it at the tender mercy of Skypower’s baggage handling), ran for their lives across six hundred metres of heat-shimmering apron, to find themselves in a near-empty aircraft.

It is supposed to be better to travel hopefully than to arrive. Not with Skypower, in the 1980s, it wasn’t! You hoped to travel – arrival was proof! – TORBEN B. LARSEN, 358 Coldharbour Lane, London SW9 8PL.

***Eurois occulta* (L.) (Lep.: Noctuidae) apparently showing migratory restlessness**

On the night of 25.vii.1991, during a period of southeasterly winds, two Great Brocades *Eurois occulta* were found on sugar at my home address. Both were females of the pale grey immigrant form, and in pristine condition. They were the forerunners of a small invasion of eastern Britain that year (Skinner & Parsons, *Ent. Rec.* **108**: 151-157).

So that they could be photographed in daylight, each was put into a separate, suitably large container, and placed in a refrigerator kept solely for the purpose. When checked about an hour later, neither moth had settled down. Both were flying vigorously, and had already begun to damage themselves. The thermostat of the fridge was then turned down until the temperature inside was only just above freezing, yet still both moths feebly attempted to crawl and flutter. By morning, one was very badly worn, and the other moderately so.

After taking what were, by then, mainly voucher photographs, it was planned to release the moths at dusk. However, the more worn one of the two became so frenetic in its container that it was released at midday, and flew off strongly in a northerly direction.

Over the years, I have kept hundreds of moths overnight for later examination, breeding or photography, but have never encountered such extreme hyperactivity as was shown by these *E. occulta*. It brought to mind the pre-migratory restlessness well-known to occur in birds, for which the German term *Zugunruhe* is sometimes used (Campbell & Lack, 1985. *A Dictionary of Birds*. Poyser, Calton). It is thought that many migrant moths continue to fly onwards, even when they have reached an area of suitable habitat, until they have used up their metabolic resources, lipids (Young, M., 1997. *The Natural History of Moths*. Poyser, London). Certainly, these *E. occulta* seemed "programmed" to fly in spite of being almost torpid with cold. Perhaps it explains why this species is one of the more regular migrants to reach Britain from similar latitudes across the North Sea, yet the pale grey form never becomes established here: the migrants might continue to disperse after arrival, and become too thinly spread.— ROY LEVERTON, Whitewells, Ordiqhill, Cornhill, Banffshire AB45 2HS.

LT. COL. W.A.C. (SAM) CARTER

It is with deep regret that we announce the death of Sam Carter on 8 February 1997. Readers will be aware that Sam was responsible for the production of the *Special Index* to this journal until the end of 1995 – a labour of love which he carried out to the highest standard of accuracy. The preparation of a species index requires a meticulous eye for detail and many hours of labour. Very few entomological journals now index their contents down to species level and it was entirely due to Sam that this journal continued to do so when others stopped. Anyone who has ever tried to track down literature references to a particular species will, like me, offer up a silent vote of thanks for Sam's endeavours.

Butterfly notes from the Greenwich district, S.E. London

Our Editor, Colin Plant, in his admirable book *The Butterflies of the London Area* (1987), gives (p.23) a most useful analysis of the species found to occur in each of the thirty-three London Boroughs during the period 1980 to 1986. Allowing for minor changes and perhaps a few losses, the position is doubtless not very different today, a decade later. The list for my borough, Greenwich, there stands at 19 species, to which I am able to add three – bringing it up to 22 (an average figure for the London area) assuming no losses in the meantime.

1. Large Skipper. An unexpected absentee from the 1987 list, and in a different class from the two following which are clearly newcomers. It was not scarce annually in my former garden at Blackheath (first noticed some time before 1950), and likewise in my present one at Charlton every year up to 1996 when it apparently failed; also sparingly but frequently throughout the district.

2. Orange-tip. In previous notes I have already recorded the first modern appearance of *A. cardamines* at Shooters Hill and Woolwich Common; since when, in 1994, it appeared in a third locality: Maryon-Wilson Park, Charlton, in one area only where the cuckoo-flower grows. None, however, could be seen there during the past two seasons, which I put down to the appalling summer droughts. Happily, however, the butterfly has fared somewhat better in its other station here, Woolwich Common; where, in its very restricted haunt, two males were noted in flight last year (4.v.1996). May was so wintry with us as probably to disfavour the Orange-tip which, hereabouts, seems almost over by June, and its status in the local fauna must be regarded as precarious. It seems to me that in our climate the species can suffer through being only single-brooded!

3. Gatekeeper. The one outstanding success-story among Charlton butterflies in 1966: in just one season it has become common in apparently all suitable places. First seen here only a few years ago, and till now confined in my vicinity to a very small part of a lightly-wooded area of Woolwich Common, except for a few stragglers – the same area in which the Orange-tip first appeared, but a shadier part of it. It was a pleasure to see Gatekeepers freely mingling with Meadow Browns at *Buddleia* flowers in the garden in July and August; and during the same period along waysides, field edges etc., usually in company with Meadow Browns and in similar numbers, or *tithonus* might even slightly outnumber *jurtina* here and there. It seems strange that the former has taken so long to reach us here; I never saw it in all my years at Blackheath. In this it contrasts strikingly with the Essex Skipper, which arrived here long ago and become locally the most abundant butterfly.

Of the other resident species listed for Greenwich Borough in 1987, I have yet to meet with the Grizzled Skipper (which could well occur on Woolwich Common); the Purple Hairstreak (probably present in the Shooters Hill woods but very easily missed); and the Brimstone, whose foodplants are absent locally. I have not for several years seen the Wall, previously not uncommon in two restricted sites: a field edge at Kidbrooke, and a short riverside stretch of Charlton Reach approaching Greenwich, at both of which there has been severe disturbance. It would be premature to write off *L. megera* as a loss to the Borough – though indeed it may be – because so many apparently suitable spots remain, and, as just noted, the butterfly can be very local.

Further species that have shown a drastic reduction in numbers here in 1996 are: Speckled Wood (scarce also in 1995 after a period of increase; a fine late female at ivy-bloom, 18.x.93, in a north-east wind after frost, is perhaps worth mention); Small Heath (not seen at all, though noted each year on Woolwich Common up to then); and Small Tortoiseshell (only two met with, besides a small colony of larvae at Kidbrooke). For what is supposed to be the commonest British butterfly, this degree of rarity surely calls for some explanation – has it been the general experience last year?—A.A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

***Cicones undatus* Guér. (Col.: Colydiidae) and other beetles on sycamore *Acer pseudoplatanus* killed by sooty bark disease at Grafham, Huntingdonshire**

Following Mendel and Owen's discovery of *Cicones undatus* under sycamore bark in Windsor Great Park in 1984 (1987, *Ent. Rec.* **99**: 93-95) and Jones' account of a diverse and rare beetle fauna associated with sooty bark disease on sycamore at Nunhead Cemetery between 1988 and 1992 (1993, *ibid.* **105**: 1-10), I enquired of Mr D. Evans, Tree Officer for Huntingdon District Council, whether the disease had been reported from the old County of Huntingdonshire. He was aware of one earlier localised outbreak in a large garden at Alconbury, but the infected trees had long been felled and removed from the site.

Sooty bark disease is caused by an ascomycete fungus *Cryptostoma corticale* Ell. & Ev. which, in Britain, is almost confined to sycamore *Acer pseudoplatanus* L., although it occurs occasionally on other species of *Acer* and horse chestnut *Aesculus hippocastanum* L. Strouts and Winter (1994, *Diagnosis of ill-health in trees*, HMSO) state that this disease was first recorded in Great Britain in London during 1948. They add that "the fungus is widespread on dead wood, but requires long, hot, dry summers to cause disease", and conclude that "outbreaks are, therefore, sporadic and concentrated in the southern half of the country". However, David Rose of the Forestry Authority's Pathology Diagnostics Advisory Service at Alice

Holt informs me (*pers. comm.*) that cases of sooty bark disease were reported in 1991/92 following the drought years of 1989/90. Similarly after the hot summer of 1995 outbreaks have occurred in Suffolk, Cambridgeshire, Northamptonshire, the Vale of Cheshire, and possibly in Derbyshire. With the apparent increasing frequency of dry years when trees suffer water stress, sooty bark disease has spread rapidly into East Anglia and central England. The big question for coleopterists was, would species such as *Cicones undatus* and *Synchita separanda* (Reitt.) spread north with the disease?

On 8 October 1996 Mr Evans notified me of a number of small to medium sized sycamore trees which had been killed at Grafham Caravan Park (TL 156696) in the Administrative County of Cambridgeshire, but in vice county 31, Huntingdonshire. I was unable to visit the site until 8 November when Mr Cubberley, the site owner, readily gave me permission to strip bark from the dead standing trees. Against all my expectations every tree was found to harbour large numbers of adult *Enicmus brevicornis* (Mann.) and *Litargus connexus* (Fourc.) together with four *Enicmus* larvae plus one larva and one pupa of *Litargus*. Among the other Coleoptera collected from beneath the bark were five adult *Cicones undatus* Guér. and 11 larval Colydiidae thought to be of this species. Certainly they were not larvae of *Bitoma crenata* (F.), ten adult specimens of which occurred under the flaking bark, or of *Synchita* which, alas, was not found to be present. This is not only the first record of *Cicones* from Huntingdonshire but it is also considerably further north than any other locality for this species of which I am currently aware.

The following is a complete list of the other species of Coleoptera recorded from under sycamore bark at Grafham and includes a few strays and species in over-wintering sites (single specimens where not stated otherwise):

| | |
|---|---|
| <i>Leistus spinibarbis</i> (F.) 2 | <i>Cryptophagus dentatus</i> (Hbst.) 5 |
| <i>Dromius agilis</i> (F.) | <i>Biphyllus lunatus</i> (F.) 9 |
| <i>D. quadrinotatus</i> (Pz.) 2 adults, 1 larva | <i>Adalia bipunctata</i> (L.) ca.20 |
| <i>Microlestes maurus</i> (Stm.) 3 | <i>Coccinella septempunctata</i> L. 2 |
| <i>Megasternum obscurum</i> (Marsh.) | <i>Aridius bifasciatus</i> Reitt.) |
| <i>Oligota picipes</i> (Steph.) 2 | <i>Mycetophagus quadripustulatus</i> (L.) 5 |
| <i>Leptusa fumida</i> (Er.) | adults, 1 larva |
| <i>Atheta trinotata</i> (Kr.) | <i>Vincinellus ruficollis</i> (Pz.) 22; |
| <i>Thanasimus formicarius</i> (L.) adult and larva | <i>Rhinosimus planirostris</i> (F.) 18 adults, 8 larvae |
| <i>Rhizopahagus bipustulatus</i> (F.) | <i>Anthicus antherinus</i> (L.) 2 |
| <i>Cryptolestes ferrugineus</i> (Steph.) 21 adults, 1 larva | <i>Bruchus rufimanus</i> Boh. |
| | <i>Sitona lineatus</i> (L.) 6. |

In addition to several woodlice *Porcellio scaber* Latr., a few earwigs *Forficula auricularia* L., and one nettle bug *Heterogaster urticae* (F.), the

following subcortical Heteroptera were present: *Dufouriellus ater* (Dufour) 16 adults, 2 larvae; *Cardiastethus fasciiventris* (Garb.) 2 adults, 10 larvae; and one *Xylocoris curtisans* (Fall.)— R. COLIN WELCH, The Mathom House, Hemington, nr. Oundle, Peterborough PE8 5QJ.

BOOK REVIEWS

Provisional atlas of the click beetles (Coleoptera: Elateroidea) of Britain and Ireland by **H. Mendel and R.E. Clarke**. 82 pages, including 73 full-page distribution maps. A4, paper - ISBN 0 906688 24 8. Ipswich Borough Council Museums, £5 plus £1 UK postage and packing. Available from Ipswich Museum, High Street, Ipswich, Suffolk, IP1 3QH.

This is an A4 sized revision of Howard Mendel's earlier provisional atlas (Mendel, 1988) which was published in A5 format by the Institute of Terrestrial Ecology. In it we find a much improved coverage of the British Isles, especially Ireland and Scotland, and the maps are inevitably, therefore, of far greater value to entomologists, ecologists and others than the earlier versions. The larger size, though not quite so comfortable on the shelf, certainly improves the clarity of the maps (produced using the DMAP programme), which are now annotated with Red Data Book or Nationally Notable status as appropriate. The introductory text is minimal, as may be expected in a *provisional* publication, but there is an extremely useful, updated synonymic checklist of British Isles species. Well worth the small price if you are a coleopterist in any form or if you are involved in using invertebrates in site assessments and the like.

Reference

Mendel, H., 1988. *Provisional atlas of the click beetles (Coleoptera: Elateroidea) of the British Isles*. Institute of Terrestrial Ecology, Cumbria.

Colin W. Plant

The Butterflies of Cornwall and the Isles of Scilly by **R.D. Penhallurick**. 180 pages, numerous maps and text figures. Hardbound. ISBN 0 9515785 1 0. Published by Dyllansow Pengwella, 10 Treseder's Gardens, Truro, Cornwall TR1 1TR. £14.75.

The latest in a long line of county butterfly faunas, this should certainly be of interest in view of the peculiarities of the climate in the extreme south-western tip of England which it covers in its pages. Cornwall, so it seems, remains a good place for butterflies, in spite of the best efforts of the tourist industry, with some 66 species here listed for all time. The species accounts are well researched and presented in a scholarly manner and the result of

several years of concentrated hard work by the author in assimilating and interpreting records from the many contributors and in extracting information from the entomological literature as far back in time as 1796.

The length of text devoted to each species varies, from half a page on some of the scarcer species recorded once or twice only, to over eight pages on the Large Blue. Sadly, however, beyond the species accounts there is precious little else to review. The author excuses his lack of "where to watch butterflies" by telling us that the Cornwall Branch of Butterfly Conservation is attempting to produce a register of important butterfly sites in the county. He continues by listing the six sites they have already noted in their files! This suggests to me that such a register is some way off production and I cannot see how a chapter on butterfly habitats and conservation in Cornwall would in any way have detracted from the value and usefulness of the *Butterfly Conservation Register* when it eventually appears.

However, this is only a personal opinion and should not put off the reader from investing in a copy. The price seems a bit steep, for a book lacking in colour plates, but it will surely be of interest to local residents and to anyone visiting Cornwall from outside.

Colin Plant

Animals under logs and stones by **C. Philip Wheeler & Helen J. Read**. *Naturalists' Handbook* 22, 1996, 90 pages (ISBN 0-85546-310-5 PB and 0-85546-302-3 HB). **Blowflies** by **Zakaria Erzincioğlu**. *Naturalists' Handbook* 23, 1996, 72 pages (ISBN 0-85546-303-1 PB and 0-85546-304-X HB). **Ants** by **Gary J. Skinner & Geoffrey W. Allen**. *Naturalists' Handbook* 24, 1996, 84 pages (ISBN 0-85546-305-8 PB and 0-85546-306-6 HB). **Thrips** by **William D. J. Kirk**. *Naturalists' Handbook* 25, 1996, 70 pages (ISBN 0-85546-307-4 PB and 0-85546-308-2 HB). Published for the Company of Biologists Ltd by The Richmond Publishing Co. Ltd, Slough. Each available in paperback (£8.95) and hardback (£15.00).

This excellent series continues with these four titles, written by specialists but for inexperienced naturalists and professional ecologists alike. The numerous illustrations in each handbook are of the usual high quality and the format follows the pattern of others in the series. The main emphasis is the ecological study of the particular group and each handbook contains identification schemes, notes on the ecology and natural history and the techniques involved in the study of the group. Ideas are given for further study which could be undertaken by students and serious researchers alike.

The keys used in *Animals under logs and stones* will enable readers to variously identify to families, genera and species level and further identification aids are listed. It will be of particular interest to readers with a broad interest in invertebrates and should encourage the study of the fascinating communities found in this microhabitat.

Thrips have been a very under-worked group of insects in this country and this new handbook should encourage many naturalists to successfully take on their identification and study. In most cases the keys enable identification of the commoner thrips to species level and rarer species to genus or family. Details are given of specialist keys that can be used to identify specimens further.

Blowflies are common and familiar insects and this excellent handbook should encourage a serious interest in them by students and naturalists. Despite being ideal insects for study, easy to keep and breed in captivity and the subject of much research, there are still many aspects of the biology of British blowflies which remain to be explored and the author ably encourages the reader to do so.

Ants can be valuable habitat indicators and have a fascinating biology but with an unsatisfactory British identification literature they have been a very under-worked group. This new handbook is therefore a very important addition to the literature. Although the handbook does not claim to be a comprehensive work and the keys encourage the reader to consult an expert for difficult species, I was disappointed to find that the opportunity had not been taken to fully illustrate the keys to help distinguish all the species in the *Myrmica* genus. Good line drawings of the scapes of each species would have made a modest but valuable addition to the key. I would still not be without *The Formicidae* by C.A. Collingwood (*Fauna Entomologica Scandinavica*, volume 8), and was extremely surprised not to find this work included in the suggestions for further reading. Nevertheless this handbook is an important work which no naturalist with an interest in invertebrates or serious ecologist should be without.

All four handbooks are extremely valuable additions both to the *Naturalists' Handbook* series and to the identification works available for British invertebrates.

P.R. Harvey

British and European butterfly vernacular names, including forms, subspecies and aberrations (second edition) by **William A. McCall and Gergely Tóth**. 76 pages plus wrapper. A5, folded and stapled. ISBN 0 952997 60 6. 1997. Privately published by the authors. £5. Available from E. W. Classey, P.O. Box 93, Faringdon, Oxon, SN7 7DR.

In spite of its title, this small booklet is essentially a list of British species of butterfly, though it is not at all clear what the criteria for inclusion may be. By way of example, the Southern Festoon *Zerynthia polyxena* ([D.&S.]) which, according to Emmet (1991) is known in Britain from a single example in vice county 3 during 1884 - probably as an escape from captive stock, is included, whilst its congener *Z. rumina* (L.) is omitted in spite of

being recorded equally dubiously in vice county 14 during 1877. The entry for each species commences with the currently used English vernacular name, followed by the scientific name below, with author and date appended. The vernacular names are then presented, where available, in Old English, Gaelic (it is not specified if this is Scottish Gaelic or Irish Gaelic), Welsh, French, Spanish, Dutch, German, Italian, Portuguese, Finnish, Swedish, Danish, Norwegian, Hungarian, Czech, Slovak, Polish, Romanian, Russian, Greek, Filipino, Tagalog, Yugoslavian, Japanese, Turkish, Urdu, Bengali and Arabic. Regrettably, the reviewer's linguistic skills do not extend to a verification of more than a fraction of these. A comprehensive list of the subspecies and aberrations follows, most of which are suffixed with authority names and/or countries where they occur but some of which are not. Boxed information under each species also gives wingspan in millimetres, number of broods per year, the stage in the life history which overwinters and the months when both caterpillar and adult may be encountered. A half-tone illustration of the adult butterfly completes the entry. A list of 55 books used in researching the work is given, though the publishers of these are, sadly, omitted. Two titles and their authors are listed under the heading "Paper references Life Science Collection 1982-1992" but no reference is given to where or when these were published. At the rear of the booklet, a list of author names and their abbreviations as used in the lists has annoying full-points after names which are not abbreviated (for example "Agassiz.") though this scarcely matters all that much.

In spite of all this and a few typographical errors which are surely inevitable in a work which is apparently produced from a home-based desktop publishing package, together with the annoying words "continued on next page" every time an entry does not end on the same page on which it started, this is nevertheless an interesting and potentially useful booklet and probably worth the low price for which it is offered.

Reference

Emmet, A. M., 1991. Chart showing the life history and habits of the British Lepidoptera. In Emmet, A.M. & Heath, J. (Eds.) *The moths and butterflies of Great Britain and Ireland*, volume 7, part 2, pages 61-303.

Aquatic Insects of North Europe: A taxonomic handbook. Volume 1 - Ephemeroptera, Plecoptera, Heteroptera, Neuroptera, Megaloptera, Coleoptera, Trichoptera, Lepidoptera. Edited by Anders Nilsson. Apollo Books, 1996. 274 pp., 1371 line drawings. Hardbound. ISBN 87-88757-09-9. DKK 400 (DKK 700 for volumes 1 and 2 if ordered together- order form from Apollo Books, Kirkeby Sand 19, DK-5771 Stenstrup, Denmark).

This is the first of two volumes (volume 2 covering Odonata and Diptera will be published at the end of 1997), covering principally identification, but also biology and ecology, of all of the species of aquatic insects known in

northern Europe. Most British species are included, though the work centres upon the Nordic countries of Denmark, Norway, Sweden and Finland and so inevitably a few British species are omitted. Absent too are some species from further south (for example, the spongilla-fly *Sisyra iridipennis* Costa, 1884 known in Europe only from Sardinia). In the section on Lepidoptera, all the native British species are included but the various introduced tropical species given in Goater (1986) are quite properly not treated.

The book comprises a series of chapters by established specialists on each of the eight Orders of aquatic insect covered and it is particularly pleasing to see a British author (in the form of David Agassiz) contributing the chapter on the Lepidoptera. Each chapter is divided into sections, with discussion presented on life-cycles and phenology, habitats, trophic relationships, morphology, collecting methods, identification keys and a checklist. The state of present knowledge is summarised where appropriate and the chapter on Lepidoptera includes an interesting section on respiration. The richly illustrated identification keys are generally given for both larvae and adults at least to generic level and in many cases to species level.

With a work of this size and nature it is only real use over time that will permit a proper evaluation of the identification keys. I possess no preserved larvae of aquatic Pyralidae to test though there seems to be no reason why the key should not work; that to the adults certainly does. I have tested the key to larvae of the alderflies (Megaloptera: Sialidae) and it works very well. The keys to adult water beetles will surely be a very valuable addition to the library of the coleopterist including, as they do, many species which could perhaps ultimately be added to the British list.

Environmental applications have engaged many people in the identification of aquatic insect larvae at a scientific, commercial or governmental level. However, these activities have been hampered by a general lack of an up to date standard work providing modern nomenclature and reliable identification keys to all taxa known from the region. This book is designed to fill this gap, as far as taxonomic knowledge is available, and in this task, I would suggest, it succeeds admirably - drawing together existing keys and combining them with new ones in a single, English-language volume. This magnificent volume more than upholds the tradition of excellence and quality established by Apollo Books and is destined to become the standard work of reference on aquatic insects in northern Europe. No serious British freshwater entomologist can afford to be without a copy.

Reference

- Goater, B. 1986 British Pyralid moths: a guide to their identification. Harley Books, Colchester.

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

(Founded by J.W. TUTT on 15th April 1890)

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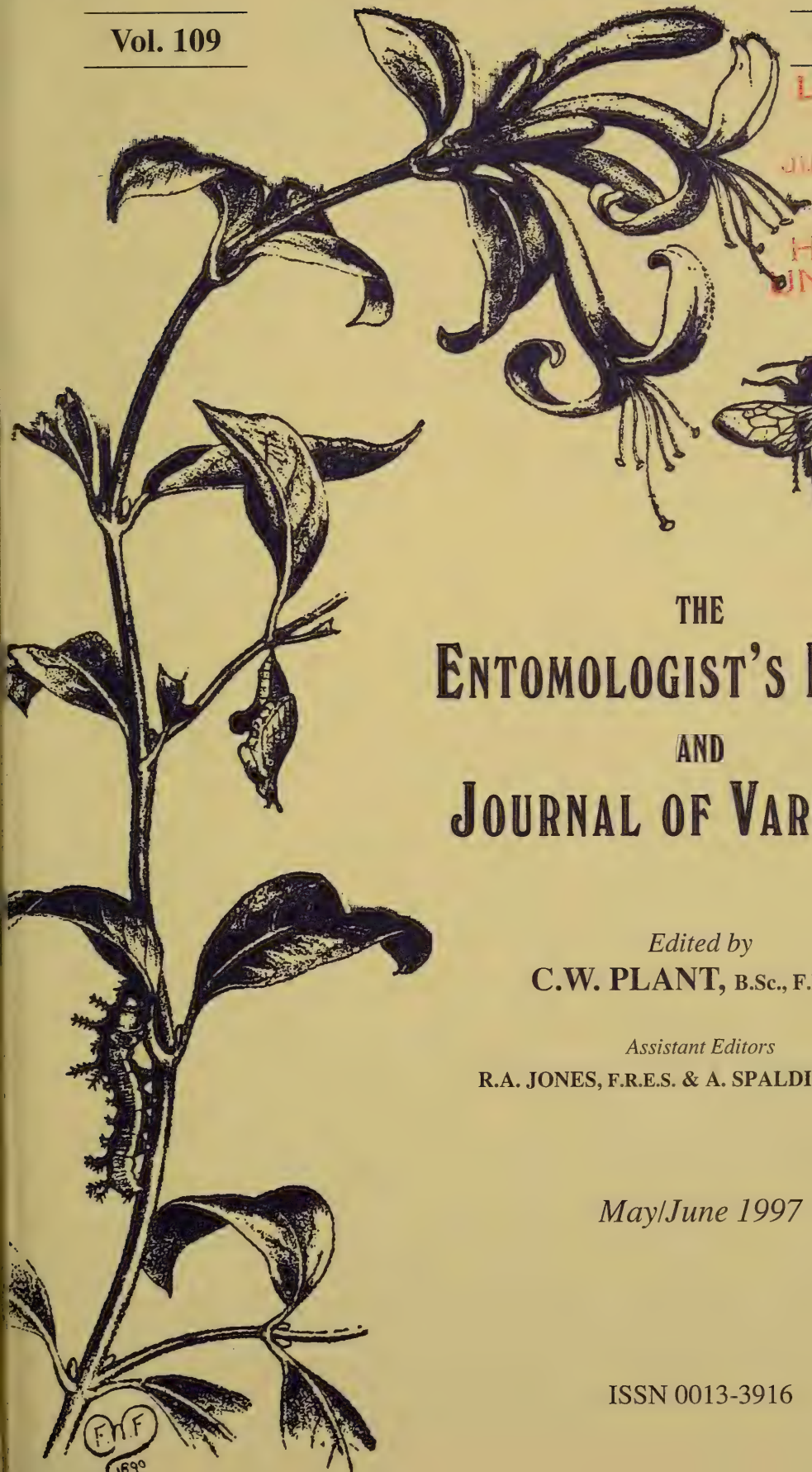
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R.A. JONES, F.R.E.S. & A. SPALDING, F.R.E.S.

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**TIMANDRA GRISEATA PETERSEN (LEP.: GEOMETRIDAE):
VOLTINISM READDRESSSED**

B.K. WEST

36 Briar Road, Dartford, Kent DA5 2HN.

PERUSING THE standard textbooks one must wonder if *Timandra griseata*'s time of appearance has changed over the past one hundred and fifty years. The latest textbook, by Skinner (1984) states that the moth is bivoltine, presumably throughout its range, in the British Isles, flying from late May to early June, and again in August and September. However, earlier textbooks present a different picture. Edward Newman (1874) and L.W. Newman and Leeds (1913) give it as being single-brooded. Barrett (1895) suggests a partial or complete second generation at the end of July and August, probably only in favourable seasons or localities, and South (1939), perhaps merely following Barrett, also suggests that there may sometimes be a second generation of moths in August. Thus we are presented with a progression from univoltinism, through partial second brood to bivoltinism.

Two outstanding local works have appeared in recent years, renowned for their detail and accuracy. Chalmers-Hunt (1969) states "There appear to be two generations annually, with perhaps a third in favourable seasons". Referring to Kent he adds that of the generations the second appears to be numerically the greatest, and a series of records quoted bears this out, but no evidence is presented for an occasional third generation. Plant (1993) for the London area comes to the same conclusion as B. Skinner, but in contrast to Chalmers-Hunt states that there is no direct evidence to support "the popular theory that there are three generations in London during 'favourable' years".

From 1969 to 1996 *griseata* has been noted at my garden m.v. light, almost invariably as singletons, on 85 nights in May, June and early July (generation 1) and on 237 nights in July, August and early September (generation 2), and also a number of specimens in September and October a month or more after the previous record. In the pages of this journal and elsewhere further examples of such late and isolated records are quoted as being worthy of special mention.

My records indicate that the timing of the two generations is influenced independently by climatic conditions. Thus, in 1970 an early first brood was succeeded by an unusually extended time between broods, and consequently a late second generation. In that year 24 specimens, equally divided between the two broods, were noted at my garden m.v. light from 28 May to 12 June, and again 10 August to 21 September, unusually five being noted in September. In general my records confirm Chalmers-Hunt's suggestion that the second generation is the larger; in only one of the twenty-eight years was the reverse the case, and that year, unusually, the species was noted on only

one occasion. On the other hand no first generation specimens were recorded in six of the years. In eighteen of the years the normal sequence of second generation records ended in August, in 1982 as early as 9 August, but was followed by an isolated late specimen on 15 September, and in 1992 14 second brood specimens were noted between 7 July and 8 August, to be followed by two specimens on 15 and 21 September, 38 and 44 days respectively later.

| Year | First generation | Gap in days | Second generation | Gap in days | Late dates |
|------|-----------------------|-------------|-------------------------|-------------|--------------|
| 1969 | 10 June – 22 June (6) | 36 | 28 July – 18 Sept. (14) | 25 | 13 Oct. |
| 1974 | 4 June – 20 June (3) | 29 | 19 July – 26 Aug. (6) | 32 | 27 Sept. |
| 1977 | 23 June – 6 July (2) | 26 | 1 Aug. – 6 Sept. (16) | 30 | 6 Oct. |
| 1982 | 6 June (1) | 42 | 18 July – 9 Aug. (7) | 36 | 15 Sept. |
| 1983 | 8 June (1) | 47 | 25 July – 23 Aug. (10) | 33 | 25 Sept. |
| 1986 | – | – | 27 July – 21 Aug. (8) | 33 | 25 Sept. |
| 1992 | 20 May – 10 June (12) | 27 | 7 July – 8 Aug. (14) | 38/44 | 15, 21 Sept. |
| 1993 | 24 May – 29 May (6) | 39 | 7 July – 19 Aug. (10) | 33 | 21 Sept. |
| 1996 | 5 June – 18 June (3) | 34 | 22 July – 4 Sept. (12) | 33 | 7 Oct. |
| | Average | 35 | | 33 | |

Table 1. *Timandra griseata* recorded at garden m.v. light at Dartford, 1969 – 1996 showing the probable third generation. Figures given in brackets are the number of nights in the stated period on which *T. griseata* was recorded.

The twenty-eight years of records indicate that the September ones fall into two categories. In nine of the years, September sightings, mostly for the earlier part of the month, are simply a continuation at short intervals of those in August, and sometimes July; others are single, isolated records usually about a month after the previous latest sighting, and all October and November records come into this category. These late isolated records for Dartford are listed in Table 1 in which the figures in brackets refer to the number of nights when they were noted; also indicated are the number of days between the first and second generation, and between the last date of the presumed second generation and the isolated record. There is a regular pattern in these late records – they average 33 days after the last previous sighting, and 35 days is the average time lapse between the first and second generations, although the former is usually poorly represented. It is mainly on these grounds that I believe these late specimens to be representatives of a partial third generation which occurs here some years.

The literature, especially this journal, contains several references to isolated, late sightings of *T. griseata*, and the following have come to my notice:

Bradwell-on-Sea, Essex, 1 November 1958 (Dewick, *Ent. Rec.* **71**: 14);
Stanford le Hope, Essex, 24 October 1968 (Tomlinson, *Ent. Rec.* **81**: 234);
Blandford, Dorset, 13 October 1960 (de Worms, *Ent. Rec.* **82**: 60);
Outwood, Surrey, 31 October 1970 (K.L. Evans, 1973, *A Survey of the Macro-lepidoptera of Croydon and North-east Surrey*);
Eastbourne, Sussex, 16 October 1976 (Parsons, *Ent. Rec.* **91**: 149);
Ninfield, Sussex, 29 October 1978 (Parsons, *Ent. Rec.* **91**: 149).

Chalmers-Hunt (*op. cit.*) contains several October records listed as the final dates in sequences containing only the first and last dates, thus negating much of their significance.

Contra-indicating an occasional partial third generation is the lack of evidence of second-brood larvae feeding up quickly to produce such imagines, indeed, Barrett (*op. cit.*) although stating that a second generation of moths may be produced in this way, adds that second-brood eggs laid in August took longer in hatching and the resultant larvae went into hibernation when half-grown in October. However, that is but one example.

I suspect that rather more than ten late, isolated specimens would have been recorded at my garden m.v. light had I not been abroad for most of September on three occasions, and October for nine of the twenty-eight years. However the significance of such late sightings largely rests with the rearing in captivity, under as near natural conditions as possible, of third generations of moths; perhaps someone can already supply information regarding this?

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- Barrett, C., 1895. *Moths of the British Isles*, Vol. VIII. Lovell, Reed & Co. Ltd., London.
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***Chloroclystis debiliata* (Hb.) (Lep.: Geometridae): first recent record of Bilberry Pug in Scotland**

On 9 July 1995, while walking through dense Bilberry *Vaccinium myrtillus* bushes on the western edge of Kirkconnell Flow NNR, near Dumfries, we disturbed a number of pugs which we tentatively identified as the Bilberry Pug *Chloroclystis debiliata* (Hübner, [1817]). The identification was later confirmed by Martin Honey of the Natural History Museum, London. In 1996, we attempted to learn more about its local distribution and flight period. On 30 June we visited the same locality with six companions and spent some time searching without success. BM returned on the afternoon of 7 July and caught and released four individuals, all in immaculate condition. We returned on 14 July and found six more. Our next visit was not until 11 August when none were found. We had, therefore, only ever seen them in July although published references to the flight period state June and July (Skinner, B., 1994. *Colour Guide to the Moths of the British Isles*: 48). We found that the species occurs throughout the Birch and Bilberry habitat from the northern reserve entrance at Grid Ref. NX 962702 to NX 967697. Similar habitat ten miles to the south-west was searched on 9 July but no pugs were seen.

The Kirkconnell Flow population is well outside the currently known range of this species. According to Skinner, *C. debiliata* occurs in parts of Ireland and Wales and is very local in southern and western England. Skinner & Goater (1981 in *An Identification Guide to the British Pugs*) state "Apparently no recent records for Scotland". Barrett (1904, *The Lepidoptera of the British Islands* 9: 146) repeated by South (1908, *The Moths of the British Isles* Second series: 253) cites Aberdeenshire as the only Scottish locality but there are three specimens in the R.C.K. collection (in the Natural History Museum, London) from Kincaid, Inverness-shire, July 1959 (ex coll. Vine-Hall).

We thank Martin Honey for confirming the identification and for assistance with the preparation of this note.— RICHARD AND BARBARA MEARNS, Connansknowe, Kirkton, Dumfries DG1 1SX.

***Idaea vulpinaria atosignaria* (Lempke) (Lep.: Geometridae) new to North Hampshire**

Two specimens of *Idaea vulpinaria atosignaria* flew to m.v. light at the cottage here on 15 and 22 July 1996. Clearly, this species has much extended its range since I used to see it near the Thames at Purfleet in 1949 and at Dulwich in 1962. I understand from Barry Goater (*pers. comm.*) that these Selborne specimens are the first to have been recorded from North Hampshire (VC12).— ALASDAIR ASTON, Wake's Cottage, Selborne, Hampshire GU34 3JH.

THE EXCEPTIONAL ABUNDANCE OF THE LARGE WHITE BUTTERFLY *PIERIS BRASSICAE* (L.) (LEP.: PIERIDAE) IN BRITAIN IN 1992: RELEVANT REPORTS FROM GERMANY AND THE NETHERLANDS

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THE ARTICLE in this journal by Howard Mendel (1995) concerning the exceptional abundance in Britain in 1992 of the Large White *Pieris brassicae* (L.) and his comments on Dr Ernest Pollard's 1994 paper in *The Entomologist* prompts me to draw attention to the Dutch annual report on migrant Lepidoptera for the year 1992 (de Vos & Rutten, 1995) and to the reports published in the German journal *Atalanta* (Eitschberger & Steiniger, 1994; Kistner, 1994) of movements of *brassicae* in the Baltic Sea and southern North Sea area in 1992, including a report in the latter of one at Bradwell-on-Sea, Essex, not mentioned by Pollard (1994) or Mendel (1995).

Kistner (*op. cit.*) describes a southerly movement across the estuary of the River Elbe in north Germany which he observed at Duhnen, near Cuxhaven, Lower Saxony, on 30 June 1992. The movement began at 10.45 hours and he estimated that it lasted for 15 minutes; 20 butterflies a minute flying past him during that period within a field of view of ten metres. On an estimated total front of about 80 metres that gave a total count of some 2,400 individuals. They flew at a height of about half a metre above the sea and the coastal sand-flats, and did not allow themselves to be deflected from their course by the many human walkers on the sand-flats. There were no stragglers and he was unable to detect any other species among the *brassicae*. He did not collect any voucher specimens.

On subsequent days Kistner found Large Whites to be present everywhere in the neighbouring gardens and parks. All were in good to very good condition, but reluctant to fly. The ratio of males to females was about 2:1. He considered that the fine condition of the butterflies suggested that the flight originated from the opposite side of the estuary around Friedrichskoog, about 18km to the north-east (he included a map of the area), rather than from St. Peter Ording on the northernmost shore of the estuary, which would otherwise have corresponded with the southerly direction of the movement. The butterflies flew in a very weak north-westerly breeze under a bright blue sky; the day, like the previous one, being very hot with an air temperature of 24°C.

At Hallig Gröde on the small island of Gröde-Appelland, just off Ockholm, near Bredstadt, on the north-west coast of Schleswig-Holstein, K. Fleeth saw migrating *brassicae* throughout 6 July 1992 flying from west to east into a Force 5 north-east wind. He was unable to estimate their numbers. Also in north-west Germany, H.J. von Loh reported that on 8 June 1992,

during a two-hour watch, he counted 39 *brassicae* (22 males, 17 females) migrating together with 35 Red Admirals *Vanessa atalanta* L. to the east-south-east along the lee-side of the new Leysiel sea-wall, five kilometres south-west of Greetsiel, which is to the north-west of Emden on the East Friesland coast.

Much farther east in Germany, on the Baltic Sea coast around Warnemünde and Rostock, Rudnick (1994) observed movements of *brassicae*, *P. rapae* and other insect species from 30 June to 12 July 1992. Following the arrival from the north, possibly from the Danish island of Falster, of swarms of Pierids, mostly *brassicae*, flying into a light easterly to south-easterly wind, easterly coastal movements on a broad front of *brassicae* and *rapae* were regularly seen during this period. All the Pierids were considered to be of the second generation. Rudnick also heard from H. Hoppe (*in litt.*) that large Pierid movements also occurred during this time farther west along the Baltic coast at Klütz, near Travemünde.

In the Netherlands, a westward movement of *brassicae* was reported in ever-growing numbers from the land of Terschelling in the Dutch West Friesian Islands on several dates from 20 May to 28 July 1992 (de Vos & Rutten, 1995). From a sighting of one flying west on 20 May the numbers grew to 265 on 31 May. Then, on two later dates, massive movements were reported: a swarm on 30 June, estimated at more than 10,000, was seen to fly west past Post 16 along the North Sea beach; on 28 July a second swarm of many thousands flew over the Boschplaat on the island. A Landrover-type vehicle which drove through the swarm with open doors was found after a short time to contain more than 200 butterflies!

Migrating *brassicae* were also observed flying along the Hondsbossche Zeewering, near Petten, on the coast of the province of Noord Holland, on several dates from 2 to 11 July, and on 22 August 1992. However, numbers were very small (de Vos & Rutten, 1995).

From the English side of the North Sea, Eitschberger & Steiniger (*op. cit.*) drew attention to a report by Crome (1992) of a huge westerly movement of Large Whites against the wind at Bradwell-on-Sea, Essex, on 18 July 1992, the same date on which Mrs E.M. Parsons saw huge numbers on the saltings adjoining Hamford Water, Little Oakley, in north Essex, and J.P. Bowdrey witnessed hundreds coming in off the sea at Dunwich, Suffolk (Mendel, 1995).

The events recorded in Germany do not on the face of it seem to bear any direct relationship to those on the Dutch and English coasts except for some overlap in dates; being, on the whole, somewhat earlier, and consisting of easterly or southerly movements in contrast to the predominantly westerly flight directions observed in the Netherlands and eastern England (see Table 1). Judging, however, from the reports from near Cuxhaven and from the Warnemünde-Rostock area of *brassicae* arriving from the north, presumably from Denmark (observations from that country and southern Sweden would

be welcome!), it is possible that these easterly movements were a temporary response to a big build-up in numbers through June into early July. Meanwhile, it seems likely that a large part of the population building up near the German North Sea coast at the end of June moved west into the Dutch West Friesian Islands, and that eventually, from the middle of July, many of them headed off westwards or south-westwards in large swarms from here, and also perhaps from as far south as the mouth of the Rhine, across the North Sea to the East Anglian and Kent coasts of England. Swarms flying west for Terschelling, for instance, could have accounted for the movement of unusual numbers of Large Whites reported as far north on the English east coast as Humberside (Pollard, 1994). There are, of course, tantalising gaps in the available data – it is probable that movements occurred on other dates and in other places where there were no entomologically-minded observers present to notice and record them. On balance, I believe that the swarms seen on the east coasts of England in July came direct from the Dutch North Sea coasts rather than, as suggested by Mendel (1995), from France.

All reports indicate that *brassicae* became very abundant in northern and north-eastern Germany in the summer of 1992, as it had been the previous year, in direct contrast to the south of the country, where it was scarce, particularly in the south-east. In the Hamburg area of north-west Germany it was reported to be too numerous to count, and remained numerous until at least mid-September. Such high numbers seem to have been the result of mass emergences of the second brood from the end of June to early August in response to the prevailing high temperatures.

Thus, the additional information available from Germany and the Netherlands given above does, I believe, strongly support Mendel's contention that migratory movements of *Pieris brassicae* did in fact cross the North Sea to England from the Continental mainland in July 1992, and that the large movements seen in England that summer cannot be explained almost entirely in terms of emergence within that country rather than immigration from abroad, as suggested by Pollard. However, in correspondence with me since the publication of his paper (*op. cit.*), Dr Pollard remarked that he is "open-minded about the extent of migration in *P. brassicae*".

At this juncture, I feel I must emphasise that British lepidopterists interested in the migration and dispersal of butterflies and moths should be aware of and consult the annual reports on migrant Lepidoptera published in Germany (*Atalanta* – not confined to Germany) and the Netherlands (*Entomologische Berichten Amsterdam*).

Finally, I find myself unable to agree wholeheartedly with Mr Mendel's remarks in his paper about the attitudes of professional entomologists to the rôle played by the host of amateurs in advancing our science. It is true that there are a minority of professionals who do tend to be somewhat arrogant in

their approach to the work of amateur naturalists, but I would not include Dr Pollard among them. Like Drs Jeremy Thomas, Paul Waring and Martin Warren, and many others one could name, he has done much to foster co-operation with amateurs, and not only through the Butterfly Monitoring

| Location | Date | Numbers | Direction of | | Source |
|--------------------------------|-------------------|----------------|--------------|------|-----------------------------|
| | | | flight | wind | |
| Terschelling, Netherlands | 20-30 May | small | W | ? | de Vos & Rutten |
| Near Emden, Germany | 8 June | small | ESE | ? | Eitschberger & Steiniger |
| Near Cuxhaven, Germany | 30 June | large | S | NW | Kistner |
| Warnemünde, Germany | 30 June - 12 July | large | S & E | E-SE | Rudnick |
| Nr. Travemünde, Germany | 30 June - 12 July | large | E | E-SE | Rudnick |
| Terschelling, Netherlands | 30 June | 10,000+ | W | ? | de Vos & Rutten |
| Petten, Netherlands | 2-11 July | small | W | ? | de Vos & Rutten |
| Schleswig-Holstein, Germany | 6 July | large | E | NE | Eitschberger & Steiniger |
| Felixstowe, England | 6 July - 14 Aug. | small-large | N & NW | ? | Pollard |
| Near Felixstowe | July | large | NW? | ? | Mendel |
| Hamburg, Germany | 10 July - 3 Aug. | large | ? | ? | Eitschberger & Steiniger |
| 14km SE of Harwich, England | 14 July | v. large | W | SW | Mendel |
| Sandwich Bay, England | 15-25 July | many thousands | WSW | ? | Mendel |
| Bradwell-on-Sea, England | 18 July | v. large | ? | ? | Crome |
| Hamford Water, England | 18 July | v. large | ? | ? | Mendel |
| Dunwich, England | 18 July | v. large | W | E | Mendel |
| Terschelling, Netherlands | 28 July | many thousands | W | ? | de Vos & Rutten |

Table 1. Movements of *Pieris brassicae* (L.) in the Baltic and North Sea regions in 1992 arranged approximately chronologically.

Scheme. There is, of course, much to be achieved in harnessing the expertise of amateurs to projects led by professionals, such as ecological surveys, mapping schemes, and the study of insect migration and dispersal, in the same way that the British Trust of Ornithology has so effectively co-ordinated the activities and work of Britain's numerous knowledgeable amateur ornithologists.

Summary

Particulars are given of movements of the Large White Butterfly *Pieris brassicae* (L.) in the summer of 1992 reported in Germany and the Netherlands, and published in journals there; and these are discussed in relation to the apparent immigrations in the same period reported from the English side of the North Sea. It is suggested that on the evidence of the Continental data and that provided by Mendel (1995), that at least the bulk of the large numbers of *brassicae* seen on the eastern coasts of England did in fact come across the North Sea from the Continental mainland.

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Flying power of *Atlantoraphidia maculicollis* Stephens (Raphidioptera: Raphidiidae)

A specimen of the snake-fly, *Atlantoraphidia maculicollis*, flew to m.v. light here on 14 July 1996. I am grateful to Stephen Brooks of the Natural History Museum for identifying the insect and for commenting that the species is widespread in the United Kingdom and associated with pine-woods. After selective felling in this village we are left with no pines and the nearest pine-woods are about four miles away. It would, therefore, seem likely that the snake-fly had flown a considerable distance, a view possibly supported by the arrival here on the same night of several heath and pine moths. Whereas distance presents no problem to moths, which are regular dispersers, I do

wonder how an insect of such apparent ungainliness as the snake-fly can negotiate flight over distance. I should be interested to hear of other instances or to receive any general comments about the flight capabilities of such insects.— ALASDAIR ASTON, Wake's Cottage, Selborne, Hampshire GU34 3JH.

EDITORIAL COMMENT: Snake-flies (Raphidioptera) are very poor flyers. Usually they show a kind of “jumping flight”, sometimes also fluttering, and only in the bright sunshine they may fly in a buzzing-like way over a distance of a few metres. Some species of the family Inocelliidae with relatively short wings compared to the large abdomen are possibly unable to fly at all. In the course of the past 35 years I have had the opportunity to observe thousands of individuals of a large part of the extant species in the field. Thus, one can absolutely exclude that the specimen reported above has actively flown over a distance of four miles. It is most likely that the individual has been drifted by wind.

There is, however, another possibility: Many snake-flies show a close, but not really strict association with certain species of trees. *A. maculicollis* usually develops on or around pines, but I have no doubt that a population may also survive in a biotope where the pines have been cut down – at least for a longer period. The biology of *A. maculicollis* has not yet been studied in detail and has thus not yet been fully understood so far.

Finally, an additional comment: The specimen reported was taken at a m.v. light. This is a very unusual event. Snake-flies are active only in the daytime and are found at artificial lights only occasionally and incidentally. Species of the genus *Dichrostigma* Navás were repeatedly found at light traps, but all other species are normally not attracted by m.v. (or other artificial) light. Any other observations are worth being published.— HORST ASPÖCK, Abt. für Med. Parasitologie, Klinisches Institut für Hygiene der Universität, Kinderspitalgasse 15, A-1095 Wien, Austria.

Yponomeuta rorrella (Hb.) (Lep.: Yponomeutidae) new to Wales

With reference to David Slade's paper on records of Microlepidoptera made in South Wales in 1995 (*antea* : 31-39), this species was not included in the draft which he sent me for checking and which is still on my files. Had it been there, I would have told him that he is to be congratulated on five, not four, species new to the Principality.

Although he is correct in stating that light-trapping “is generally accepted as the main method for collecting Lepidoptera”, the trap is a poor substitute for fieldwork. On a single day in late October, if directed to suitable localities, I would expect to add at least 50 species for Glamorgan. Next October I shall be aged 89 and am less agile than formerly, but if all goes well and suitable arrangements can be made, I would be prepared to justify that claim, if challenged to do so.— A.M. EMMET, Labrey Cottage, Victoria Gardens, Saffron Walden, Essex CB11 3AF.

**TEN NEW SPECIES OF *CORTICARINA* REITTER
(COL.: LATRIDIIDAE) FROM CENTRAL AND SOUTH AMERICA**

COLIN JOHNSON

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IN AN EARLIER PAPER (Johnson, 1990), some general comments were made on the appearance, taxonomy and ecology of the Latridiidae subfamily Corticariinae (which includes the genus *Corticarina* Reitter), after which six new species from diverse parts of the world were described and their male genitalia figured. As a result of that work, I have had the opportunity to study additional material collected recently in Central and South America. This has produced a surprisingly rich number of species of *Corticarina*, most of which are unknown and which are now described and figured. References to works dealing with allied species are given where appropriate, as the genus has not yet been monographed.

Abbreviations have been used to indicate the institutional source of studied material as follows: MM - Manchester Museum; SEM - Snow Entomological Museum, University of Kansas; ZML - Zoological Museum, University of Lund. Where the series permits, duplicates of species will be placed in the Manchester Museum.

***Corticarina ashei* sp.n.**

Length 1.57mm; head breadth 0.34mm; pronotal breadth 0.44mm; elytral breadth 0.70mm; antennal length 0.53mm. Pale brown, legs yellowish brown, antennae pale at the base but increasingly infuscated apically. Antennal segments rather long; 8 about as long as broad, 9 barely longer than broad, 10 slightly longer than broad; club narrow and gradual. Body moderately convex. Pronotum somewhat small, 1.20 times as broad as long, broadest somewhat in front of the middle, the sides somewhat weakly curved; post median depression well marked, lateral impressions distinct; surface weakly shining, alutaceous microsculpture rather strong; pronotal punctures moderate, not deep, rather close, discal punctures about half a diameter apart; hind angles moderately toothed. Elytra long oval, 2.78 times as long as the pronotum and 1.47 times as long as broad, broadest around the middle, sides moderately curved; surface shining, reticulation weak and little distinct; strial punctures moderately large and close, interstices basally barely broader than the striae; elytral pubescence curved and only slightly raised, the hairs c.0.048mm, slightly overlapping. Winged. Male: anterior tibial tooth small, ventral, situated at the apical fifth; ventrite 5 with large semi-circular impression in middle third, apical margin of this somewhat emarginate; aedeagus Fig. 1.

Holotype male. Mexico - Hidalgo: 30.8km S Jacala Hwy. 85, 12.vii.1990, 2050m, shaking oak leaves, leg. J.S. Ashe, K.J. Ahn & R. Leschen (SEM).

Similar in size, colour and shape to *riveti* Johnson from Ecuador (Johnson, 1981), especially due to the somewhat small pronotum. Besides its quite different aedeagus, the male of *ashei* can be easily distinguished by its straight front and middle tibiae and modified ventrite 5.

***Corticarina brooksi* sp.n.**

Length 1.54-1.68mm; head breadth 0.34-0.38mm; pronotal breadth 0.46-0.58mm; elytral breadth 0.68-0.83mm; antennal length 0.58-0.62mm. Colour brown, head and pronotum usually darker than the paler elytra; legs yellowish-brown; antennae with at least the two basal segments yellowish-brown, the stem mostly paler but increasingly infuscated in at least the apical half. Antennal segments rather long, slender; 8 quadrate to slightly longer than broad; 9 conical and markedly longer than broad, 10 about as long as broad, the club narrow and gradual. Body rather markedly convex. Pronotum moderately broad, 1.10-1.39 times as broad as long, broadest around middle, sides moderately rounded; post median depression weakly impressed, lateral impressions absent; surface rather shining, alutaceous microsculpture fine and distinct; puncturation moderate, rather close, discal punctures about half a diameter apart or less; hind angles moderately toothed. Elytra rather ample and long oval, 2.42-2.68 times as long as the pronotum, 1.31-1.48 times as long as broad, broadest in front of the middle, mostly near the basal third; sides moderately curved, somewhat contracted in a straight line apically, curved basally; surface shining, not reticulate; striae punctures moderate and close, interstices basally much broader than striae; elytral pubescence slightly curved, nearly flat, the hairs c.0.048mm, slightly overlapping. Winged. Male: anterior tibial tooth strong, ventral, situated in front of the middle; aedeagus Fig. 2.

Holotype male. Costa Rica - Puntarenas: Monte Verde, 1420m, 25.v.1989, ex. gilled mushrooms on log, leg. J. Ashe, R. Brooks & R. Leschen (SEM).

Paratypes. Costa Rica - Puntarenas: same data but 1450m, ex. polypore on log, 1 male (SEM); same data but 1550m, 26.v.1989, ex. beating, 2 females (SEM); same data but 1400m, 28.v.1989, ex. cycad sporocarp, 1 male, 1 female (SEM); same data but ex. beating, 1 female (SEM).

Allied to the Mexican *baranowskii* Johnson (Johnson, 1990) in colour, especially including the apically infuscated antennae. Distinguishable by the longer antennae, larger size, smaller pronotum, more convex dorsum and somewhat more apically constricted elytral shape. The aedeagus is extremely characteristic in each species.

***Corticarina conjuncta* sp.n.**

Length 1.41-1.62mm; head breadth 0.34-0.37mm; pronotal breadth 0.43-0.54mm; elytral breadth 0.64-0.73mm; antennal length 0.48-0.56mm. Colour pale brown, rarely darker; legs yellowish-brown; antennae pale at the base (at least basal two segments) but increasingly infuscated apically.

Antennal segments rather long; 8 about as long as broad; 9 conical and markedly longer than broad; 10 about as long as broad, the club narrow and gradual. Body rather convex. Pronotum moderately to rather broad, 1.26-1.38 times as broad as long, broadest around middle, sides moderately curved; post median depression moderately impressed, lateral impressions absent; surface weakly shining to rather dull, alutaceous microsculpture usually well marked; puncturation somewhat moderate, close, discal punctures less than half a diameter apart; hind angles moderately toothed. Elytra oval, 2.44-2.60 times as long as the pronotum, 1.30-1.43 times as long as broad, broadest somewhat in front of middle; sides moderately curved, very feebly contracted in a straight line behind middle; surface shining, not reticulate; stria punctures moderate and close, interstices much broader than striae; elytral pubescence slightly curved, nearly flat, the hairs c.0.04mm, slightly overlapping. Winged. Male: anterior tibial tooth moderate, ventral, situated in front of the middle; aedeagus Fig. 3.

Holotype male. Guatemala - Guatemala City, near Univ. del Valle de Guat., 1540m, 6.xi.1991, sifting litter in tropical montane forest, leg. R. Baranowski (ZML).

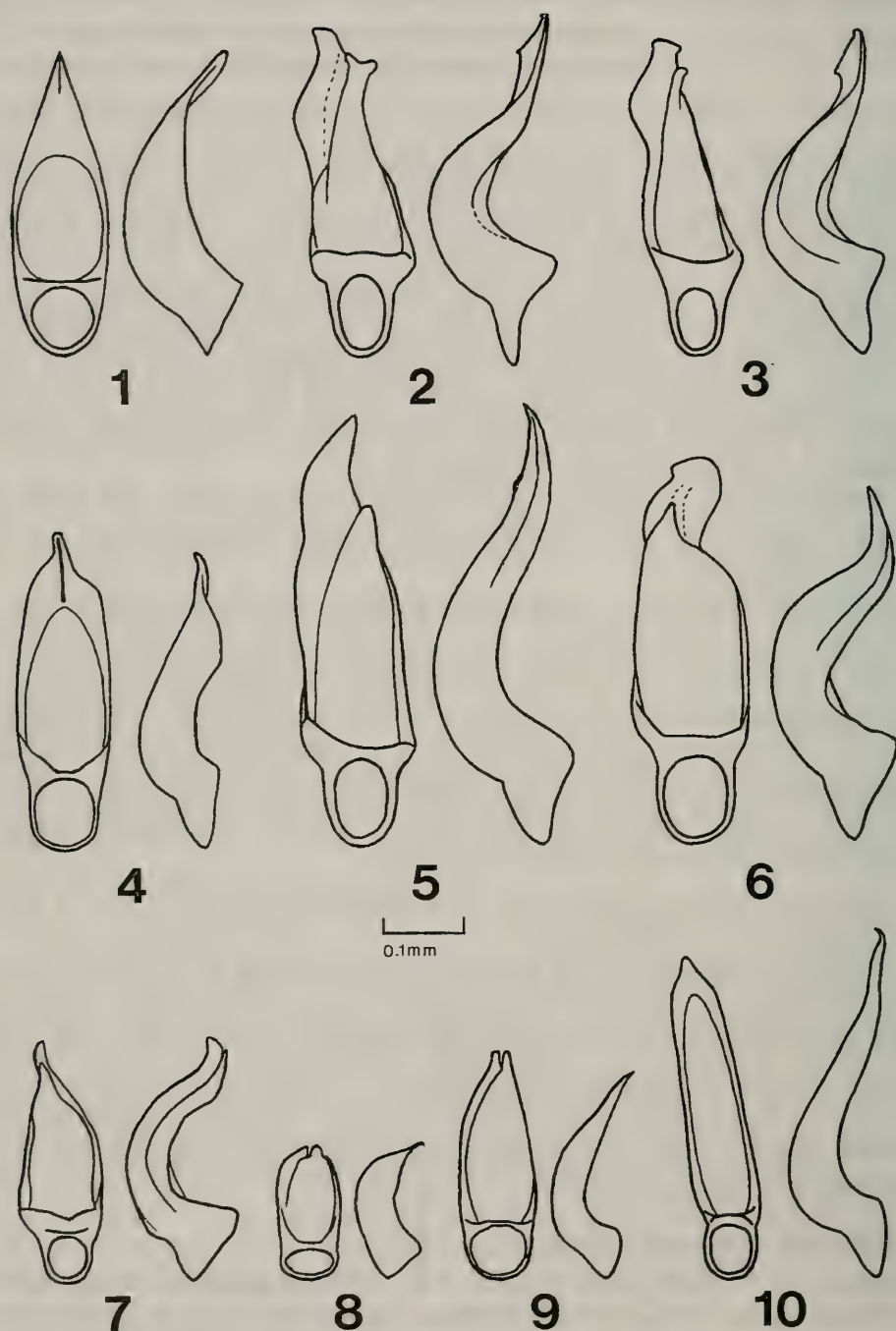
Paratypes. Guatemala - some data as holotype, one female (ZML); 3km E Antigua Guatemala, 1600m, 7.xi.1991, sweeping at road in tropical montane forest, leg. R. Baranowski, two males (ZML); same data but sifting litter in tropical montane forest, two females (ZML); Solola, 2km N Panajachel, 1700m, 15.xi.1991, beating vegetation in tropical montane forest, leg. R. Baranowski, one female (ZML); 5km E Antigua Guatemala, 1780m, 6.xii.1991, sifting litter near small stream in ravine of tropical montane forest, leg. R. Baranowski, one male (ZML).

Other specimens. Guatemala - Panajachel, 4.xii.1973, leg. J. & S. Klapperich, two females (MM).

In general appearance this species is closely allied to the nearctic and central American *cavicollis* (Mannerheim) (see Andrews, 1985) and can only be recognised with certainty by the aedeagus. However, there are some subtle external differences. The pronotum in *conjuncta* is broadest at the middle (in front in *cavicollis*), its puncturation is somewhat coarser and denser, and the more convex elytra usually have less flattened and more distinctly overlapping pubescence.

***Corticarina guatemalica* sp.n.**

Length 1.42-1.57mm; head breadth 0.32-0.35mm; pronotal breadth 0.42-0.50mm; elytral breadth 0.64-0.80mm; antennal length 0.46-0.51mm. Colour dark brown, head and pronotum \pm reddish brown; legs yellowish-brown, apical tarsal segments slightly infuscated; antennae pale at the base (at least basal two segments) but increasingly infuscated apically. Antennal segments rather short; 8 broader than long, 9 quadrate to slightly longer than broad, 10 distinctly broader than long, club somewhat narrow and weakly



Figures 1-10, aedeagi of new species of *Corticarina*, ventral and lateral views: 1, *ashei*; 2, *brooksi*; 3, *conjuncta*; 4, *guatemalica*; 5, *impensa*; 6, *portentosa*; 7, *lescheni*; 8, *inobservata*; 9, *rickardi*; 10, *viatica*. (All figures drawn to the same scale).

abrupt. Body moderately convex. Pronotum somewhat narrow to moderately broad, 1.24-1.38 times as broad as long, broadest at or slightly in front of middle; sides somewhat moderately curved; post median depression moderately impressed, lateral impressions absent; surface weakly shining to rather dull, alutaceous microsculpture strong and distinct; puncturation rather fine, shallow, close to rather sparse, discal punctures half to one diameter apart; hind angles somewhat finely toothed. Elytra long oval, 2.76-2.88 times as long as the pronotum, 1.26-1.49 times as long as broad, broadest at or behind the middle; sides moderately curved; surface shining, not reticulate; stria punctures moderate to somewhat fine and close, interstices much broader than striae; elytral pubescence feebly curved, nearly flat, the hairs c. 0.040-0.048mm, slightly overlapping. Winged. Male: anterior tibial tooth well marked, ventral, situated near the apical quarter; aedeagus Fig. 4.

Holotype male. Guatemala - Puerta Parada, near Guat. City, 1840m, 10.xi.1991, beating vegetation on open ground at small road, leg. R. Baranowski (ZML).

Paratypes. Guatemala - same data as holotype, two males, three females (ZML); same data but 2.xi.1991, sweeping in mixed Cupressus forest, three females (ZML); Solola, 2km N. Panajachel, 1700m, 15.xi.1991, beating vegetation in tropical montane forest, leg. R. Baranowski, three males, three females (ZML); same data but 19.xi.1991, one female (ZML); 5km E Antigua Guatemala, 1780m, 5.xii.1991, beating vegetation in tropical montane forest, leg. R. Baranowski, one male (ZML); same data but 7.xii.1991, sweeping in tropical montane forest, one male, four females (ZML).

Other specimens. Guatemala - Antigua, 30.xi.1973, leg. J. & S. Klapperich, one female (MM); Sierra Madre, 5.xii.1973, by J. & S. Klapperich, one female (MM).

This species is very closely allied to *simoni* Johnson from Venezuela (Johnson, 1981), and apart from the brownish coloration, seems to differ only in its highly distinctive aedeagus.

***Corticarina impensa* sp.n.**

Length 1.44-1.76mm; head breadth 0.32-0.39mm; pronotal breadth 0.46-0.61mm; elytral breadth 0.64-0.82mm; antennal length 0.58-0.64mm. Colour usually pale brown, rarely darker, head and pronotum often slightly darker than the paler elytra; legs and antennae entirely yellowish-brown, except for the antennal club which is a slightly darker brown. Antennal segments long and slender; 8 slightly longer than broad; 9 conical and markedly longer than broad, 10 longer than broad although slightly shorter than 9, the club narrow and gradual. Body rather markedly convex. Pronotum rather broad, 1.26-1.42 times as broad as long, broadest around middle, sides rather strongly rounded; post median depression moderately

impressed, lateral impressions absent; surface rather shining, alutaceous microsculpture fine and distinct; puncturation somewhat fine to moderate, close, discal punctures usually less than half a diameter apart; hind angles moderately toothed. Elytra rather ample and long oval, 2.35-2.48 times as long as the pronotum, 1.33-1.41 times as long as broad, broadest in front of the middle, near the basal third; sides moderately curved, somewhat contracted in a straight line apically, curved basally; surface shining, not reticulate; strial punctures moderate and close, interstices basally much broader than striae; elytral pubescence slightly curved, nearly flat, the hairs c. 0.048-0.056mm, overlapping. Winged. Male: anterior tibial tooth strong, ventral, situated in front of the middle; aedeagus Fig. 5.

Holotype male. Guatemala - 5km E Antigua Guatemala, 1780m, 4.xi.1991, sifting litter near small stream in ravine of tropical montane forest, leg. R. Baranowski (ZML).

Paratypes. Guatemala - same data as holotype, one male (ZML); same data but 5.xii.1991, one male, one female (ZML); same data but 6.xii.1991, one female (ZML); 3km E Antigua Guatemala, 1600m, 7.xi.1991, sifting litter in tropical montane forest, leg. R. Baranowski, one female (ZML); Puerta Parada near Guatemala City, 1840m, 2.xi.1991, sweeping in mixed Cupressus forest, leg. R. Baranowski, one male (ZML); Solola, 4km N Panajachel, 1900m, 11.xi.1991, sifting litter in tropical montane forest, leg. R. Baranowski, one female (ZML); Solola, 2km N Panajachel, 1700m, 15.xi.1991, sifting litter near small stream in tropical montane forest, leg. R. Baranowski, one female (ZML).

This large and broad species comes near to the Panamanian *ignea* Johnson (Johnson, 1979). It is larger than *ignea*, has a broader pronotum, longer antennae and somewhat longer and less flattened elytral pubescence. The aedeagus of *impensa* is highly characteristic, being unlike that of any other neotropical species known to me, although there are related species in North America, eg. *scissa* LeConte (Andrews, 1985).

***Corticarina inobservata* sp.n.**

Length 1.39-1.50mm; head breadth 0.32-0.34mm; pronotal breadth 0.44-0.45mm; elytral breadth 0.62-0.66mm; antennal length 0.50-0.51mm. Colour dark brownish-black, rarely dark-brown; legs yellowish-brown; antennae with basal segment pale brown, segment 2 yellowish, 3-7 increasingly infuscated apically, club dark brown. Antennal segments moderately long, slender; segment 8 broader than long, 9 slightly longer than broad, 10 about as long as broad, club rather narrow and gradual. Body somewhat strongly convex. Pronotum somewhat moderately broad, 1.18-1.21 times as broad as long, broadest slightly in front of middle, sides almost moderately curved; post median depression feeble, lateral impressions weak; surface little shining, alutaceous microsculpture distinct; puncturation

somewhat fine, moderately close, shallow; hind angles somewhat finely toothed. Elytra rather short oval, 2.43-2.49 times as long as the pronotum, 1.42-1.47 times as long as broad, broadest around middle, rarely before; humeri effaced, callus absent; sides moderately curved; surface shining not reticulate, rarely \pm shagreened; strial punctures moderate and close, interstices basally slightly wider than striae; elytral pubescence slightly curved, a little raised, the hairs c. 0.056mm, slightly overlapping. Brachypterous, wings narrower and distinctly shorter than an elytron. Male: anterior tibial tooth small, ventral, situated in front of the middle; aedeagus Fig. 8.

Holotype male. Mexico - Oaxaca: 53km S Miahuatlan, 2300m, 18.xi.1989, sifting deep litter near small stream in mixed montane forest, leg. R. Baranowski (ZML).

Paratypes. Mexico - Oaxaca: same data, two males (ZML).

This brachypterous species is extremely closely allied to *reidi* Johnson, known only from the unique Colombian holotype (Johnson, 1990). It may be most reliably distinguished from the latter species by its much smaller size and highly distinctive aedeagus.

***Corticarina lescheni* sp.n.**

Length 1.25-1.44mm; head breadth 0.31-0.34mm; pronotal breadth 0.46-0.50mm; elytral breadth 0.66-0.70mm; antennal length 0.43-0.46mm. Pale reddish-brown, legs and antennae paler, more yellowish. Antennal segments short; 8 broader than long, 9 almost as long as broad, 10 conspicuously broader than long, the club moderately marked. Body somewhat strongly convex. Pronotum short and broad, 1.38-1.45 times as broad as long, broadest somewhat in front of the middle, the sides somewhat strongly rounded; post median depression shallowly impressed; lateral impressions absent; surface weakly shining, alutaceous microsculpture well marked; pronotal puncturation fine, very shallow and close, discal punctures c. one diameter apart; hind angles moderately toothed. Elytra short oval, 2.52-2.67 times as long as the pronotum and 1.26-1.31 times as long as broad, broadest in front of middle, sides rather strongly rounded; somewhat constricted behind; surface shining, reticulation weak and little distinct; strial punctures rather fine and close, interstices basally much broader than striae; elytral pubescence fine and almost flat, the hairs c. 0.024-0.032mm, barely overlapping. Winged. Male: anterior tibial tooth moderate, ventral, situated well in front of the middle; aedeagus Fig. 7.

Holotype male. Peru - Tambopata Prov.: Madre de Dios Dpto., 15km NE Puerto, Maldonado Reserva Cuzco Amazonico, 12° 33'S, 69° 03'W, 200m, swamp trail, ex. flight intercept trap, 16.vii.1989, leg. J.S. Ashe & R.A. Leschen (SEM).

Paratypes. Peru - same data as holotype, one female (SEM); same data but 10.vii.1989, no trail name, one male, two females (SEM); same data but Plot Z1, trail 26, one female (SEM).

In external appearance, this species is very closely allied to *amoena* Johnson (Johnson, 1981), described from Panama. It may be distinguished from that species by its larger size and different aedeagus.

***Corticarina portentosa* sp.n.**

Length 1.55-1.66mm; head breadth 0.36-0.37mm; pronotal breadth 0.48-0.50mm; elytral breadth 0.70-0.72mm; antennal length 0.50-0.58mm. Colour pale yellowish-brown, legs and basal third or so of antennae paler still. Antennal segments rather long, slender; 8 almost as broad as long; 9 conical and distinctly longer than broad; 10 only slightly longer than broad, the club narrow and gradual. Body moderately convex. Pronotum moderately broad, 1.29-1.33 times as broad as long, broadest slightly in front of middle, the sides somewhat weakly curved; post median depression moderately impressed, lateral impressions distinct; surface little shining, alutaceous microsculpture rather strong; puncturation moderate, rather close, discal punctures about half a diameter apart or less; hind angles moderately toothed. Elytra long oval, 2.80-2.88 times as long as the pronotum, 1.43-1.53 times as long as broad, broadest around to behind the middle, sides rather weakly curved; surface rather shining, not or indistinctly reticulate; striae punctures somewhat moderate and close, interstices basally much broader than striae; elytral pubescence distinctly curved, somewhat raised, the hairs c. 0.048-0.056mm, strongly overlapping. Winged. Male: anterior tibial tooth strong and ventral, situated in front of the middle; aedeagus Fig. 6.

Holotype male. Mexico - Oaxaca: 21km N Villa Diaz Ordaz, 3100m, 10.ix.1990, sifting litter in boreal forest, leg. R. Baranowski (ZML).

Paratype. Mexico - Oaxaca: same data but 2750m, sifting litter in pine/oak forest, one male (ZML).

The pale coloration, somewhat narrow body shape and rather weakly curved elytral sides seem to place this species near the Brazilian *beloni* Johnson (Johnson, 1981). However, *portentosa* is more yellowish, has a smaller pronotum, longer antennae and longer and more raised, overlapping, elytral pubescence. The aedeagus is quite different in both species.

***Corticarina rickardi* sp.n.**

Length 1.44-1.63mm; head breadth 0.31-0.37mm; pronotal breadth 0.43-0.51mm; elytral breadth 0.69-0.78mm; antennal length 0.50-0.58mm. Colour dark, head and pronotum usually brownish-black, elytra dark brown; legs yellowish-brown, not or feebly infuscated; antennae with the basal segment pale to dark brown, 2 yellowish-brown, the stem paler basally but increasingly infuscated in the apical half or so. Antennal segments moderately long, slender; 8 quadrate to slightly longer than broad; 9 conical and markedly longer than broad; 10 about as long as broad, the club narrow and gradual. Body rather markedly convex. Pronotum moderately broad, 1.20-1.27 times as broad as long, broadest around to somewhat in front of middle, sides moderately rounded; post median depression strongly

impressed, lateral impressions weak but usually distinct; surface rather uneven, shining, alutaceous microsculpture indistinct; puncturation moderate, very close, spaces between punctures somewhat ridge-like; hind angles moderately toothed. Elytra somewhat short oval, 2.60-2.75 times as long as the pronotum, 1.36-1.47 times as long as broad, broadest around middle, sides somewhat strongly curved; surface shining, not reticulate; stria punctures somewhat coarse and close, interstices basally narrower than striae; elytral pubescence slightly curved, nearly flat, the hairs c. 0.056-0.064mm, slightly overlapping. Winged. Male: anterior tibial tooth moderate, ventral, situated close to the apical third; aedeagus Fig. 9.

Holotype male. Mexico - Oaxaca: 53km S Miahuatlan, 2300m, 18.xi.1989, sifting deep litter near small stream in mixed montane forest, leg. R. Baranowski (ZML).

Paratypes. Mexico - same data, five males, two females (ZML).

In size, colour and shape, this species approaches the Mexican *baranowskii* Johnson (Johnson, 1990). Apart from the highly characteristic aedeagus, it may be separated from *baranowskii* by its more closely punctured pronotum whose surface is more uneven, lacks distinct microsculpture, and has distinct lateral impressions.

***Corticarina viatica* sp.n.**

Length 1.57-1.68mm; head breadth 0.35-0.38mm; pronotal breadth 0.45-0.47mm; elytral breadth 0.69-0.74mm; antennal length 0.50-0.56mm. Colour dark, head and pronotum black, elytra brownish-black; legs dark brown, tibiae and tarsi \pm infuscated; antennae with the basal segment dark brownish-black, segment 2 yellowish-brown, remaining segments increasingly infuscated, club blackish. Antennal segments rather long; 8 about as long as broad; 9 more or less longer than broad; 10 about as long as broad; club narrow and gradual. Body moderately convex. Pronotum somewhat small, 1.19-1.28 times as broad as long, broadest around or somewhat in front of the middle, the sides somewhat moderately curved; post median depression well marked, lateral impressions rather weak; surface weakly shining, alutaceous microsculpture fine and distinct; pronotal punctures moderate, not deep, rather close, discal punctures mostly up to half a diameter apart; hind angles moderately toothed. Elytra long oval, 2.87-3.04 times as long as the pronotum and 1.54-1.59 times as long as broad, broadest around middle, sides somewhat weakly curved; surface shining, reticulation lacking; stria punctures moderately large and close, interstices basally broader than striae; elytral pubescence slightly curved, nearly flat, the hairs c. 0.04mm, barely overlapping. Winged. Male: anterior tibial tooth small, ventral, situated at the apical fifth; ventrite 5 simple; aedeagus Fig. 10.

Holotype male. Mexico - Oaxaca: 20km N Oaxaca City, hwy 175, 2600m, 12.ix.1990, sweeping at roadside, pine/oak forest, leg. R. Baranowski (ZML).

Paratypes. Mexico - Oaxaca: 21km N Villa Diaz Ordaz, 3100m, 20.ix.1990, sifting litter in boreal forest, leg. R. Baranowski, one female (ZML); same data but 10.ix.1990, one female (ZML); same data but 7.ix.1990, sweeping at roadside in boreal forest, one female (ZML).

Very closely allied to *ashei* sp.n. in general appearance but distinguishable by its blacker coloration, darker legs and antennae, flatter elytral pubescence, as well as by the simple ventrite five and characteristic aedeagus of the male.

Acknowledgements

I am indebted to the late J. Klapperich for material collected in Guatemala which is now in the Manchester Museum. Other material was very kindly collected and prepared for my attention by Rickard Baranowski and made available through Roy Danielsson, Zoological Museum, University of Lund, Sweden; Rich Leschen and R. Brookes, Snow Entomological Museum, University of Kansas, USA, kindly made available material collected on their expeditions.

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Ladybirds (Col.: Coccinellidae) attracted to light

It may be of interest that the 60 beetle species caught during the years 1994, 1995 and 1996 in a mercury-vapour light-trap run by one of us (JVD) in his garden in Wimbledon, Surrey included six ladybirds, viz:

Adalia bipunctata (L.) — two in July 1995

A. 10-punctata (L.) — one in August 1996

Harmonia quadripunctata (Pontoppidan) — one in July 1995

Anatis ocellata (L.) — one in August 1995

Myrrha 18-guttata (L.) — one in July 1996

Halysia 16-punctata (L.) — four in July 1996

The capture in the trap of several examples of *H. 16-guttata* is in keeping with the report of Majerus and Williams (1989 *Ent. Gaz.* **40**: 71-78) that this is a species attracted to mercury vapour light and with a similar observation

recently reported by our friend A.A. Allen (1996, *Ent. Rec.* **108**: 298). Our findings indicate, however, that other species of ladybird also are attracted to light.— J.A. OWEN, 8 Kingsdown Road, Epsom, Surrey KT17 3PU and J.V. DACIE, 10 Alan Road, Wimbledon, Surrey SW19 7PT.

Some records of Coccinellidae (Coleoptera) attracted to mercury vapour light

These notes have been stimulated by the reading of A.A. Allen's interesting note on the occurrence of *Halyzia sedecimpunctata* (L.) at his mercury vapour lamp in south-east London (*Ent. Rec.* **108**: 298). I can report two captures of the Orange Ladybird taken in my mercury vapour trap at Grange-over-Sands, Cumbria (SD4077). The first was on 4.vii.1994 and the second on 2.vii.1996. Both specimens were in the trap. They exhibit the prominent translucent explanate sides of the thorax which Mr Allen emphasises as a useful diagnostic character of the species.

Mr Allen also refers to the interesting article by Majerus and Williams (1989, *Ent. Gaz.* **40**: 1-8) in connection with the distribution of the Orange Ladybird. In the same article the authors note that “. . . though ladybirds on the whole do not visit moth-traps, this species may be attracted to ultra-violet light”. *Apropos* this statement, in addition to the above records I can add the following: *Adalia 10-punctata* (L.) one specimen on 27.ix.1995; *Coccinella 11-punctata* (L.) one specimen on 10.viii.1995; *Myzia oblongoguttata* (L.) one specimen 27.vii.1995. All these records were at my m.v. trap at Grange-over-Sands. Regarding *M. oblongoguttata* I was interested to read that a specimen was exhibited, at the BENHS Exhibition, taken at m.v. light in Richmond Park, Surrey by M.S. Parsons (*Br.J.ent.nat.Hist.* **9**: 234).

Though I have no specific data I have in the past frequently noted both *Coccinella 7-punctata* (L.) and *Adalia 2-punctata* (L.) in or about the trap.

— NEVILLE L. BIRKETT, Beardwood, Carter Road, Grange-over-Sands, Cumbria LA11 7AG.

***Halyzia sedecimguttata* (L.) (Col.: Coccinellidae): a postscript**

My recent note (*Ent. Rec.* **108**: 298) recording this ladybird here at light is inaccurate in one particular: it appears now that I had previously taken a specimen at m.v. light at Blackheath near here (24.vi.1959), but retained no memory of the event, and the beetle is not in my collection. This, therefore, and not the above Charlton record, may be the first for the London suburbs; though, as 1959 was a year of far greater insect abundance and migratory activity than 1996 in this district, the *Halyzia* may have come from an indefinite distance. Finally, two further specimens turned up at the lamp here last summer (22.vii.1996 & 19.viii.1996).— A.A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

**Notes on the voltinism of *Scythropia crataegella* (L.)
(Lep.: Yponomeutidae)**

The standard textbooks (Meyrick, 1928 *A revised handbook of British Lepidoptera*; Emmet 1979 & 1988 *Moths and Butterflies of Great Britain and Ireland*; Agassiz (1996, in Emmet (Ed.) *MBGBI* 3)) are unanimous in giving the time of year for the appearance of imagines of *Scythropia crataegella* (L.) as July.

This moth is a relative newcomer to Yorkshire, being first recorded in 1983 near Doncaster, since when both moths and larvae have been recorded with increasing frequency in the south of VC63 in the Doncaster, Rotherham and Sheffield districts. Moths have occurred between 13 June and 19 July with the majority of records being during the last week of June and the first week of July.

During 1995 *crataegella* appeared in my garden m.v. trap between 1 and 9 July and then was not seen again until I emptied the trap on the morning of 1 September and was surprised to find a single fresh moth. That same evening I made a field excursion to Anston Stones Wood, south-east of Rotherham where a further moth was attracted to m.v. light.

The summer of 1996 saw a similar pattern with moths present in my garden trap from the beginning of July until the latest, four on 14 July. I walk the short distance between my home and office daily during weekdays and about the third week of August (exact date not recorded) I noticed a small patch of webbing on a low trimmed *Cotoneaster* hedge bordering the pavement a few properties up from my own which looked reminiscent of that of *crataegella*. During the following week the amount of webbing had increased markedly until, by early September, a two-metre length of the hedge was entirely enveloped with further sporadic small patches elsewhere on the same hedge. On 4 September the first adult *crataegella* were noticed sitting among the webbing and on adjacent foliage and small numbers of apparently freshly emerged moths were casually noticed most subsequent mornings as I walked by. On 26 September a slightly more thorough inspection revealed over a dozen moths, two of which were retained as a voucher for what I now regarded as a very late date, and just in time, for heavy rain and a sudden drop in temperature resulted in no further moths being seen.

There can be little doubt that the substantial population on the *Cotoneaster* hedge was of a hitherto unrecorded second generation, that this should first occur at the very northern limit of the species distribution in Britain is all the more remarkable.— H.E. BEAUMONT, 37 Melton Green, West Malton, Rotherham, South Yorkshire S63 6AA.

THE EUROPEAN *TEMNOSTOMA* SPECIES (DIP.: SYRPHIDAE)M.C.D. SPEIGHT¹ & J.-P. SARTHOU²¹Research Branch, National Parks & Wildlife Service, 51 St Stephens Green, Dublin 2, Ireland.²INP-ENSAT, 145 avenue de Muret, F-31076 Toulouse, France.

FOUR SPECIES OF *Temnostoma* Lapeletier & Serville are at present known from Europe. The least well-known of these is *T. meridionale* Krivosheina and Mamaev, described from the Caucasus. Until recently, *T. meridionale* has been known only from south-east Europe, but we have encountered the species in France and, while this note was in preparation, Doczkal's (1996) paper appeared, recording the species from Sweden, Germany and the Czech Republic. Keys to the adults of the four European species are provided in French by Bradescu (1991) and in Dutch by van der Goot (1981). Krivosheina and Mamayev (1962) provide a key distinguishing last instar larvae of these species. With the thought that an English-language account of European *Temnostoma* species might be useful, the present note summarises available information on the European *Temnostoma* species, provides a key for their determination, details the French *T. meridionale* records and includes figures of the male terminalia of *T. meridionale*. *T. meridionale* is remarkably similar to *T. vespiforme* in general appearance, size, adult habits and habitat.

Species accounts***Temnostoma apiforme* (Fabricius), 1794**

Preferred environment: forest; humid deciduous forest, from northern *Betula* forest to the upper levels of *Fagus/Picea* forest and down to the alluvial hardwood forest of major rivers. *Adult habitat*: clearings, track-sides, meadows adjacent to forest; although a forest insect, can be found flying close to the ground and visits the flowers of low-growing plants. *Flowers visited*: white umbellifers, *Geum*, *Matricaria inodora*, *Potentilla*, *Ranunculus*, *Rubus idaeus*, *Trientalis*. *Flight period*: June/end July, and on into August at higher altitudes/more northerly latitudes. *Larva*: wood-boring, in solid wood within part-rotted stumps and logs; described and figured by Heqvist (1957), based on larvae collected from a rotten *Betula* stump. Krivosheina and Mamayev (1962) also figure and describe the larva of this species, from material collected from stumps of *Tilia*. These latter authors provide a key distinguishing *T. apiforme* larvae from those of the other European *Temnostoma* species. *Range*: Lapland south to northern France (Ardennes, Vosges); from eastern Belgium through northern and central Europe into European parts of Russia and on through Siberia to the Pacific coast and Japan; also known from southern Europe in the former Yugoslavia. Although this species has a wide geographic range, it has a relictual distribution pattern over much of its European range and is probably

now under threat at European level. *Determination*: Bradescu (1991), van der Goot (1981). The adult insect is illustrated in colour by Torp (1994). The male and female terminalia are figured by Barkalov (1991). This species has a strong general resemblance to *T. meridionale* and *T. vespiforme*.

***Temnostoma bombylans* (Fabricius), 1805**

Preferred environment: *Fagus* forest with over-mature trees, up to its upper altitudinal limits and old alluvial hardwood forest. *Adult habitat*: clearings and track-sides etc.; flies one to two metres from ground; settles on low-growing vegetation. *Flowers visited*: *Cornus*, *Hypericum*, *Ranunculus*, *Rubus*, *Sambucus nigra*, *Viburnum opulus*. *Flight period*: May/June and July at higher altitudes. *Larva*: wood-boring, in solid wood within part-rotted stumps and logs; described and figured by Krivosheina and Mamayev (1962), from larvae collected from stumps and logs of *Acer*, *Fagus*, *Quercus* and *Tilia*; also reared from well-rotted *Fagus* stumps by Derksen (1941), who indicates metamorphosis takes two years and the larvae inhabit stumps of trees felled seven to eight years previously. The larvae described and figured, with puparium, by Heiss (1938) and Metcalf (1933) as those of *T. bombylans* were probably those of *T. balyras* (Walker). *T. bombylans* is not known to occur in North America. Krivosheina and Mamayev (1962) provide a key distinguishing *T. bombylans* larvae from those of the other European *Temnostoma* species. *Range*: Finland and Sweden south to the Pyrenees and North Africa; the former Yugoslavia; eastwards from northern France through northern and central Europe into Asiatic parts of Russia as far as the Pacific coast and Japan; Korea. In Europe, probably the most frequently met with *Temnostoma* species, but nonetheless very local. *Determination*: Bradescu (1991), van der Goot (1981). The male terminalia are figured by Hippa (1978) and Barkalov (1991), who also figures the female terminalia. The adult insect is illustrated in colour by Kormann (1988), Torp (1984, 1994) and van der Goot (1986).

***Temnostoma meridionale* Krivosheina & Mamayev, 1962**

Preferred environment: *Fagus* and thermophilous *Quercus* (*Q. pubescens*) forest containing over-mature and fallen trees. *Adult habitat*: sunlit forest, where the species flies between the trees, the males hovering at three metres or higher; settles on low-growing vegetation. *Flowers visited*: no information. *Flight period*: beginning May/beginning July. *Larva*: wood-boring, in solid wood within part-rotted stumps and logs; described and figured by Krivosheina and Mamayev (1962), from larvae collected from a *Fagus* log. These authors also provide a key distinguishing *T. meridionale* larvae from those of the other European *Temnostoma* species. *Range*: Sweden, Finland, Germany, central and south-west France (including the Pyrenees), the Czech Republic, Romania and the Caucasus. *Determination*:

Bradescu (1991), van der Goot (1981), Doczkal, (1996). The male terminalia are figured by Barkalov (1991), Doczkal (1996) and the present article (Figs. 1d, 1e). Barkalov also figures the female terminalia. Hipa (1978) erroneously figures the male terminalia of this species under the name *T. vespiforme*. Krivosheina & Mamayev (1962) had no access to the Linnaean material of *T. vespiforme* and were unaware that their new species occurred in Scandinavia. Whether their concept of *T. vespiforme* corresponds with that of Linnaeus is therefore unknown. Re-examination of the Linnaean type of *T. vespiforme* is necessary to establish which species should carry that name.

Details of known French records as follows: Dordogne: Razat d'Eymet, 21.v.1996, male, col. & det. C.W. Plant, in coll. CWP; Haute-Garonne: Candele, 14.v - 4.vi.1995, females, col. & det. JPS, in coll. JPS; Pyrénées-Atlantiques: Forêt d'Iraty, 12.vii.1981, males, 800m., col. & det. MCDS, in coll. MCDS and Mus. Nat. d'Hist. Nat., Paris; Bosdarros, 2.vii.1995, female, col. & det. JPS, in coll. JPS.

***Temnostoma vespiforme* (L.), 1758**

Preferred environment: deciduous forest containing over-mature and fallen trees, especially riverine alluvial gallery forest. *Adult habitat:* open forest, especially near brooks and rivers; males hover at three metres and higher; both sexes frequently visit flowers (often visiting pasturage and meadows for the purpose) and settle on shrub foliage etc.; in flight an exact mimic of *Vespula*; when settled this insect carries its black fore tarsi as though they were antennae, resembling exactly black *Vespula* antennae and vibrates them as *Vespula* does its antennae. *Flowers visited:* umbellifers; *Clematis*, *Cornus*, *Crataegus*, *Lonicera xylosteum*, *Papaver nudicaule*, *Ranunculus*, *Rubus idaeus*, *Senecio*, *Sorbus*. *Flight period:* May/June and on into July/August at higher altitudes/more northerly latitudes. *Larva:* wood-boring, in solid wood within part-rotted stumps and logs; described and figured by Stammer (1933) and Krivosheina and Mamayev (1962); illustrated in colour by Rotheray (1994); distinctions from the larva of *T. apiforme* (Fab.) are detailed in Heqvist (1957). Krivosheina and Mamayev (1962) provide a key distinguishing *T. vespiforme* larvae from those of the other European *Temnostoma* species. This species has been bred from *Acer*, *Alnus*, *Betula*, *Fagus*, *Quercus* and *Tilia*. *Range:* from central Sweden south to northern Spain; from northern France (Brittany) eastwards through most of Europe and on through asiatic parts of Russia to the Pacific coast and Japan; also in the Nearctic from Alaska south to New Mexico and east to Quebec. Now rather localised over much of its European range. *Determination:* Bradescu (1991), van der Goot (1981). The male terminalia of a Finnish specimen of *T. meridionale* are erroneously figured under the name *T. vespiforme* by Hipa (1978). The male terminalia of *T. vespiforme* are figured by Barkalov (1991), Doczkal (1996) and the present article (Figs

1F, 1G). Barkalov also figures the female terminalia. The adult insect is illustrated in colour by Kormann (1988), Torp (1984, 1994) and van der Goot (1986). *T. meridionale* Krivosheina & Mamaev is extremely similar to

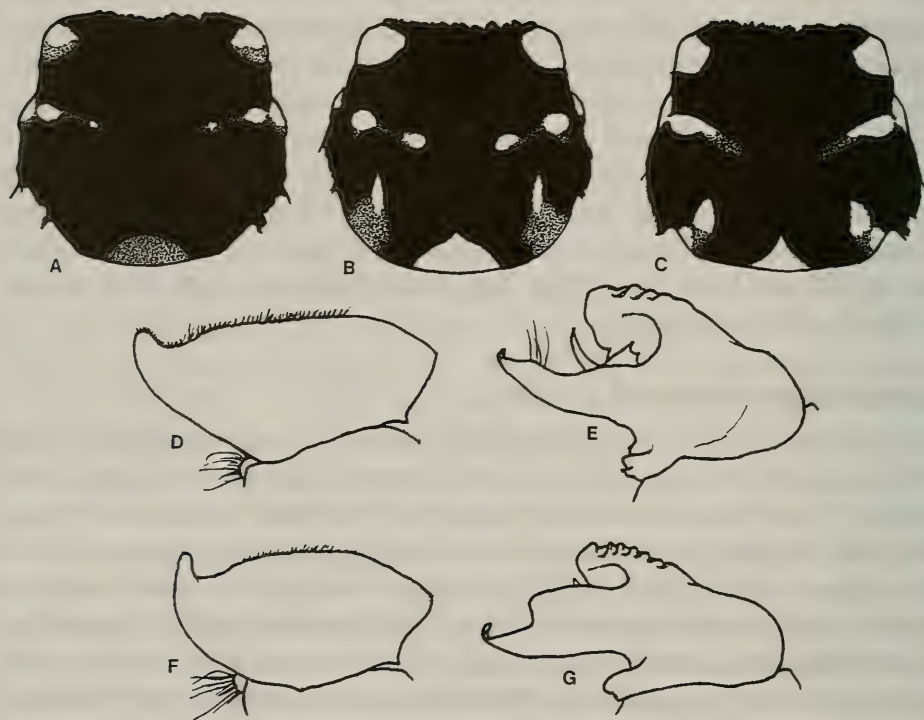


Fig. 1: *Temnostoma* species.

A - C = mesoscutum and scutellum, dorsal view; D, F = surstylus, lateral view; E, G = hypandrium, lateral view; A = *T. apiforme*; B, D, E = *T. meridionale*; C, F, G = *T. vespiforme*.

T. vespiforme. The two species are almost indistinguishable in the field and occur in the same habitats. Care is needed to ensure correct identification of these two species, given that *T. meridionale* is now known to occupy much the same European range as *T. vespiforme*. *T. meridionale* was not taken into account in the review of Linnaean types of Syrphidae conducted by Thompson *et al* (1982). Since it is now known that *T. meridionale* occurs over such a wide range in Europe, it cannot be assumed that *vespiforme* of Linnaeus is the species assumed to bear this name by Krivosheina & Mamayev, who did not examine the Linnaean type. However, until and unless the identity of the Linnaean type is checked it is reasonable to assume current interpretations of *T. vespiforme* are correct.

Key to the identification of European *Temnostoma* species

1. Abdomen predominantly black and yellow, tergites 2-4 each with a transverse yellow band confined to the anterior half of the tergite; at its apex, abdominal tergite 2 *less than* two times as wide as its median length *bombylans* (Fab.)
 - abdomen predominantly black, tergites 2-4 each with yellow markings within both the anterior and posterior halves of the tergite; at its apex, abdominal tergite 2 *more than* two times as wide as its median length . 2
2. Posterior half of the mesoscutum black, except for a median patch of silver-grey dusting along the posterior margin, immediately anterior to the scutellum (Fig. 1A) *apiforme* (Fab.)
 - posterior half of the mesoscutum with at least one pair of distinct yellow marks, which may, or may not, reach the post-alar calli 3
3. Post-alar calli partly yellow; transverse suture of the mesoscutum marked by a short, transverse, yellow stripe at each side, which continues a similar distance toward the mid-line as silver-grey dusting (Fig. 1C). Male terminalia as in Figs. 1F, 1G *vespiforme* (L.)
 - post-alar calli without yellow markings, though with more or less extensive silver-grey dusting; transverse suture marked on each side by a pair of rounded, yellow patches, which are narrowly connected by a transverse stripe of silver-grey dusting (Fig. 1B). Male terminalia Figs. 1D, 1E *meridionale* Krivosheina & Mamayev

Acknowledgements

We are grateful to Colin Plant for information on the Dordogne specimen of *T. meridionale*.

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***Ptilophora plumigera* D.&S. (Lep.: Notodontidae) in the London area**

In *Ent. Rec.* **108**: 72 Ian Furguson records the capture of a male of this species at Shoreham, Kent on 11.xi.1995 confirming the continued presence of the species in the London area and invalidating the suggestion by Colin Plant (*Larger Moths of the London Area*, 1993) that *P. plumigera* may now be extinct in the area. However, both Plant and Furguson, in stating that the last previous record for the species was in 1955, were evidently unaware of the specimen observed by Paul Sokoloff in this locality on 7.xi.1973, reported in Chalmers-Hunt's supplement to his *Butterflies and Moths of Kent* in *Ent. Rec.* **92**. To this I must add that the species was not uncommon there in 1966; five specimens came to a single m.v. light on 8 November located in tetrad TQ56F, the tetrad to the south of that where the moth has frequently been observed in the past.

Although part of this habitat has changed by the spread of scrub on the open downland, the decline in insects has been phenomenal. I believe the cause, and the continuing threat to *P. plumigera* and other species remains with the destruction of surrounding downland, the abandonment of pasture and fodder crops such as clovers, vetches, lucerne and sainfoin which abounded in the neighbourhood fifty years ago in favour of subsidised arable farming, especially of cereals and rape with attendant toxic chemical spraying.— B.K. WEST, 36 Briar Road, Dartford, Kent DA5 2HN.

***Acrobasis tumidana* (D.&S.) (Lep.: Pyralidae): 1996 records from south-east Kent**

Several scarce migrant species of Lepidoptera were recorded from the Dungeness area during 1996, but the most unprecedented event of the year involved the arrival over a 17-day period in August of 24 individuals of the species *Acrobasis tumidana*. These are summarised as follows: Greatstone, 5.viii.96 (2), (B. Banson); Dungeness, 9.viii.96 (D. Walker); New Romney, 11.viii.96 (K. Redshaw); New Romney, 12.viii.96 (KR); New Romney, 13.viii.96 (KR); Dungeness, 17.viii.96 (S.P. Clancy); Greatstone, 18.viii.96 (3) (BB); New Romney, 18.viii.96 (KR); Lydd, 18.viii.96 (KR); Greatstone, 19.viii.96 (2) (BB); Lydd, 19.viii.96 (SPC); Lydd, 19.viii.96 (KR); Dungeness, 19.viii.96 (3) (KR & SPC); Dungeness, 20.viii.96 (KR); Dungeness, 21.viii.96 (3) (KR); Dungeness, 22.viii.96 (SPC).

To put these records in perspective, Skinner (*Ent. Rec.* **107**: 241-243) lists all confirmed and unconfirmed records of this species to the end of 1994. These comprised 13 authentic and six unconfirmed twentieth-century records.

I would be interested to learn of any other records of this species to find out how widespread the 1996 *tumidana* invasion was.— S.P. CLANCY, "Delhi" Cottage, Dungeness, Romney Marsh, Kent TN29 9NE.

***Morophaga choragella* ([Denis and Schiffermüller, 1775])
(Lep.: Tineidae), its distribution and preferred diet in southern England**

I was interested to read Dr Alexander's note concerning the above species (Alexander 1996, *Br.J.Ent.Nat.Hist.* **9**: 165). I have been rearing tineids associated with fungi for about six years now and have encountered this moth on numerous occasions over this period. I feel that putting on record these occasions may add additional information to our knowledge of its present distribution and abundance, at least in south-east England, and hope that others will find this information useful for recording this large and attractive Tineid.

I first reared *M. choragella* from the bracket fungi *Ganoderma adspersum* and *Piptoporus betulinus* collected at Burnham Beeches near Slough, Berkshire (VC22) in October 1990 (total of a dozen examples) and again in March 1996 (several from the same species of fungi). Subsequently I have reared examples from larvae collected at the following localities:

Cockthorpe, Wells-next-the-Sea, West Norfolk (VC28), August 1991, two from *Ganoderma applanatum*; Hainault Forest, Chigwell Row, Essex (VC18, November 1992, one from *Fistulina hepatica*; Medmenham, Buckinghamshire (VC24), September 1994, one each from *Pseudotrametes gibbosa* and *Coriolus hirsutus*; Rufous Stone, New Forest, South Hampshire (VC11), March 1995, four from a huge colony

in *G. adpersum*; Whiteknights, Reading, Berkshire, March 1996, ten from *G. adpersum* and four in *P. betulinus*; Moor Cops, Reading, Berkshire, September 1996, four from *G. adpersum*.

Unfortunately I have not had the opportunity to collect fungal material from south-west England, Wales or the Midlands northwards, but I hope to do so as the opportunities arise. With the exception of Medmenham, the localities where this moth have been found consist mostly of dense woodland rather than pasture woodland.

Pelham-Clinton (1985, Tineidae. In: *The moths and butterflies of Great Britain and Ireland*, Volume 2. Harley Books.) states that *M. choragella* feeds on *Leptiporus*, *Phellinus* and *Piptoporus* fungi and possibly on dead wood. Despite rearing numerous tineids from dead wood I have never encountered this moth in such material, neither have I found infested *Leptiporus* or *Phellinus* fungi. I have retained infested material in *Inonotus dryadeus*, *Coriolus versicolor* and *Fomes fomentarius* but again failed to rear this moth. At the sites I have collected material from it is clear that *Ganoderma* fungi are the preferred diet of *M. choragella*.— I. SIMS, 2 The Delph, Lower Earley, Reading, Berkshire RG6 3AN.

Nemapogon varietella (Clemens, 1859) (Lep.: Tineidae) in Berkshire

I wish to record the occurrence of the above moth at Burnham Beeches near Slough, Berkshire (VC22). During a field meeting of the British Entomological and Natural History Society on 14 October 1990 I collected examples of the fungus *Piptoporus betulinus* showing signs of infestation by lepidopterous larvae. These were characterised by holes situated around the edge where the pore-like gills met the margin of the cap, with a concentration of holes near the stem. The holes were exuding white frass trapped in silken material. The fungi were kept in a shed in Perspex boxes and produced fourteen examples of *Nemapogon varietella* (formerly known as *N. personella*) on 13 April 1991. This would appear to be a new record for VC22, as this species is not listed by Baker (1994, *The butterflies and moths of Berkshire*. Hedera Press). In the spring of 1995, I took Mr D. O'keeffe to this locality. From material that he collected he succeeded in rearing numbers of this species later that year from an example of the fungus *Fistulina hepatica*.

On a subsequent visit to this locality on 13 March 1996 I collected further *P. betulinus* with the hope of obtaining *Nemaxera betulinella*, another species reared from this locality by Mr O'keeffe the previous year. My material did not produce any of these, but a further three *N. varietella* emerged on 8 May that year. I have not met with this moth elsewhere and believe this discovery constitutes a record worthy of publication. I have heard rumour that this site has been threatened with gravel extraction in the past.— I. SIMS, 2 The Delph, Lower Earley, Reading, Berkshire RG6 3AN.

**TRIOZA ALACRIS FLOR (HEMIPTERA), A GALL-CAUSING
PYSLLID NEW TO IRELAND**J.P. O'CONNOR¹, P. ASHE², S. WISTOW³¹*National Museum of Ireland, Dublin 2, Ireland.*²*Research Associate, Department of Zoology, University College, Dublin 4, Ireland.*³*"Derrymore", Coliemore Road, Dalkey, Co. Dublin, Ireland.*

ON 23 SEPTEMBER 1996, JPOC noticed numerous unusual-looking galls on a small (2m) bay laurel *Laurus nobilis* L. growing in the front garden of a house on Essex Road, Dublin City (01632). The margins of the leaves were thickened and rolled downwards. One of the galls was collected. Using Stubbs (1986), it was identified as being caused by a psyllid, *Trioza alacris* Flor. Since this species had not been recorded previously from Ireland, JPOC returned to the tree on 25 September 1996 and obtained additional material. Galls were also discovered on a tree in a neighbouring garden and on the next day, a further infestation was noted on Pembroke Road (01732), some half a kilometre distant. Subsequently on 6 October 1996, galls were found on a bay laurel in the Zoological Gardens, Dublin (01235), *circa* five kilometres away from the original discovery. In all these instances, the trees were large and the galls scarce.

The collected galls were carefully opened and numerous nymphs of *T. alacris* were obtained. Adults (male and female) of *T. alacris* were also discovered. The material was determined using Hodkinson and White (1979) and White and Hodkinson (1982). Syrphid larvae were present within several of the galls where they had eaten nearly all the contained nymphs. They were identified as belonging to either *Syrphus ribesii* (L.) or *S. vitripennis* Meigen using Rotheray (1989). Both these species also attack aphids.

The discovery of *T. alacris* in Ireland is very interesting. The species is widely distributed throughout Europe and also occurs in the Crimea and Georgia. It was introduced into Great Britain in the early 1920s where it is now locally common in nurseries and gardens in southern England, extending northwards to North Wales (Hodkinson & White, 1979). It is considered a pest species and has the common name of Bay Sucker. Young plants are most susceptible and when heavily infested, leaves shrivel and fall prematurely. Shoots also die (Buczacki & Harris, 1983). *T. alacris* is also a pest in North America where it was first reported in 1911. As nearly as can be determined, it was introduced on nursery stock that had originated in Belgium (Johnson & Lyon, 1988). The species is also reported to have been introduced into Argentina and Chile. In Italy, the species has two to five generations per year and the adult overwinters on its hostplant (Ossiannilsson, 1992). However in Britain, there is only one adult generation each year (Hodkinson & White, 1979; Buczacki & Harris, 1983).

Undoubtedly, the species has been brought into Ireland on imported plants, probably during recent times.

Voucher specimens have been deposited in the National Museum of Ireland.

Acknowledgements

We are very grateful to Dick Dunne of Teagasc and Robert Nash of the Ulster Museum for confirming that the species is new to Ireland.

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Hazards of butterfly collecting – the lost sheep, Ghana, August 1996

In August 1996 I did something that I never, ever, thought I would do. I led a 14-strong tour-group through Ghana. Not just any old tour-group, mind you, but one of dedicated American entomologists. Our friends in London were laying bets on the odds of my coming back with my sanity intact. But the Ghana Wildlife Department was very keen on the first ever eco-tourism tour to Ghana, so when the call came, I had to respond. After all . . . I had first suggested the idea some three years ago in order to establish my street credibility with the Department. The old World War One recruitment poster materialised in front of my eyes, with the Director (Gerry Punguse, *aka* Bushman number one) in the place of Lord Kitchener; "Ghana conservation needs YOU!"

So there I was, at Accra Airport, to receive my group, British Airways contriving to bring them in seven hours late. An inauspicious start.

But things looked up. We had a fine hotel. The first day in Aburi Botanical Gardens went well. The second day on the Atewa Range at Kibi was sensational. Any visit to the Atewa forests is sensational, since it is one



The lost sheep, well and truly found! (Photo: J. Khun).

of the finest remaining rainforests in all of West Africa. The group as a whole notched up more than 200 species that day (there may well be 700 species in all).

The third day was designed for contrast. We went to the Shai Hills, a conservation area on the Accra Plains. This is part of the Dahomey Gap, a tongue of savannah that separates the West African forest zone from that of Nigeria, and a major biogeographical feature. Instead of the lush forest of Atewa, this is savannah, complete with troops of baboons and gazelles. Butterflies are not thick on the ground in West African savannahs, though 90% of the species are not found in the rainforest, but I am happy to report that the educational aspects of the visit were appreciated.

We re-assembled at 14.00 at the bus. We did the usual head-count – this seems to be one of the most important aspects of leading a tour-group. We were one short. Eileen was missing. We waited half-an-hour. No Eileen. We sent the group back to Accra and began a search. Only a handful of rangers were available, and by nightfall we had to stop without success.

Eileen was a sensible person, with considerable experience in tropical countries. She should be able to cope – unless she had been incapacitated. The Warden, James Oheimi, arrived towards dusk from Accra. It was comforting having a good friend on hand, but after dark, nothing could be done as far as the search was concerned.

James was excellent. He took us to the nearby army training base. We were promised a company of soldiers for tomorrow's search. The police were notified. The chief promised community support if needed.

We then returned to Accra . . . with the aim of chartering an aircraft first thing in the morning. It was a glum crew in the car that evening . . . Dr Tom Emmel, the US tour leader, Dr Malcolm Stark, the Ghana ground coordinator, and myself. We headed for the restaurant where the group was scheduled for dinner. No Eileen. We got a thumbs-up from members of the group. They thought we had found Eileen? I shook my head, and gave a thumbs-down. It was a few moments till it became clear that she had returned.

She had actually done well, apart from getting lost. After becoming aware that she was lost, she tried climbing a small peak to check if she could find some bearings. She could not. But she did see a road in the far distance, and headed for there. A quarry truck took her to a main road. She asked for the "ranger post" . . . no-one understood what she was talking about. Taxis and buses stopped, and pretty soon she was surrounded by hundreds of people, and lots of conflicting advice. So she decided to go back to Accra – then she could phone and call off the flap . . . logical to an American. Well, in the outback of Africa, things are not always that simple. For one, you cannot phone Shai Hills from Accra. Then the taxi punctured twice on the way back to Accra – and had no spare tyre. When it eventually arrived, the hotel could not be located (no-one thought to look in the telephone directory – they do this well in Ghana, though in many African countries the directories are a decade old).

When she finally reached the hotel, our assistant there immediately packed her into a taxi, and went back to Shai Hills – we must have crossed them in the dark somewhere along the line. By 22.00 we were all re-assembled, and I had a very stiff drink. The next morning I was back at Shai Hills to thank the Army, the Police, etc. – James acknowledged that he had actually shed a tear when Eileen turned up that night.

But all is well that ends well. The combined tour clocked up about 450 species, half of Ghana's known butterfly fauna. We had no further traumas (or is that traumae?). Everything went well, but then Ghana is one of the nicest and most friendly countries that I know. And, believe it or not, the Nigerian Conservation Foundation has now press-ganged me into doing a similar tour to Nigeria! Watch this page!!– TORBEN B. LARSEN, 358 Coldharbour Lane, London SW9 8PL.

Withdrawal of record of *Cochylis pallidana* Zell. (Lep.: Tortricidae) for North Hampshire

My record from Selborne, Hampshire, in August 1995 (*Ent. Rec.* **108**: 42) was based on an insecure identification and should, therefore, be withdrawn.– A.E. ASTON, Wake's Cottage, Selborne, Hampshire GU34 3JH.

AN EXPEDITION TO ENGLAND

ANON

JUNE, and already *Orthosia gothica* was nearly over in the Scottish Highlands. It was time for our long-planned trip to southern England, hopefully to see and catch moths which were known to us only as coloured illustrations in the field guides. After loading the battered old camper-van, my three companions and I set off eagerly southwards, having told our wives that we were going to an important business conference.

Curiously, as we crossed the English border, we passed an identical van on its way north. We were roughly at the halfway point in our journey. Soon, the scenery became increasingly flat and monotonous, with the grey ribbon of motorway stretching out endlessly before us.

Gradually, it began to get dark. Moths appeared in the headlights; it was obviously a very suitable night. The temptation to stop became irresistible, as we left the motorway and quickly found some suitable woodland in which to operate our generators and traps. Moths started arriving almost at once, but their quality disappointed us – a few *Blepharita adusta*, a couple of insipid *Selenia lunularia*, one *Cleorodes lichenaria*. Surely we hadn't come all this way for such familiar species? We need not have worried. Much better things began to arrive; beautiful dove-grey *Calliteara pudibunda* males, and the stunning melanic form of *Biston betularia*, which none of us had ever seen.

On the road once more as it got light, we reached the M25. It was the first time any of us had been south of Watford. Suitable habitat was hard to find, and the verges of the motorway itself looked as good as any. Seeing some mullein plants growing on a recently bulldozed embankment, we parked the van in a convenient small, raised lay-by, and set to work collecting larvae of one of our target species, *Cucullia verbasci*. This task was interrupted by the arrival of a police car containing two constables who told us that we were committing an offence. However, there seemed to be a communication problem, possibly because we replied in Gaelic. This had the desired effect, as after debating whether to call in the Ethnic Liaison Officer they moved us on with only a warning.

Leaving the motorway, we drove through leafy North London suburbs, with detached houses set in large gardens, shielded from the road by tall cypress hedges. Simultaneously, we had the same thought – *leautieri!* – and leapt out as the van screeched to a halt. We formed into pairs, taking one side of the road each. The person on the pavement held a beating tray, while his companion gave the cypresses a few hefty whacks with a stout stick to dislodge the larvae, a procedure best accomplished from within the garden. Fortunately, the natives were friendly, tapping on their windows to attract our attention, then waving vigorously. A few appeared on their doorsteps to shout a cheery greeting. Within a couple of hundred yards, our sporrans were

bulging with pill-boxes containing enough *Lithophane leautieri* larvae to satisfy everyone's needs.

Stopping only to gather a few armfuls of delphiniums from a herbaceous border, to be checked at leisure for *Polychrysia moneta*, we made our way back to the van. For the second time that day, a policeman was in attendance. He obviously had more entomological knowledge than his colleagues, because he asked us whether we had noticed the Double Yellow-lines. Lacking the scientific name, we were about to reply that this was a moth with which we were unfamiliar, then realised it must be a local term for *Camptogramma bilineata*, more commonly known as the Yellow Shell. After setting him straight on this point, we were once more on our way.

The plan was to stay a night with some friends in Kent, and operate the traps in their large mature garden on a slope of the North Downs. A peaceful night's nothing seemed in prospect. However, it proved impossible to work out a route from house to trap which did not trigger the infra-red beams operating the security system, causing floodlights to blaze and electronic alarms to sound. I almost expected machine guns to open up! What a contrast to our Scottish croft, where the door can safely be left ajar for the postie if a person goes out for the day. But we did get *Apamea anceps*, the only resident member of the genus that I'd ever seen.

Next day the van set out for the extreme south-east corner of England – a land more bleak and barren than anything the Cairngorms has to offer, known (we think) as “Dungnesse”. We marvelled how the inhabitants of the scattered cottages could scrape a living from their tiny crofts on such stoney ground! Hardy indeed must be the clan that lives there. The weather was very hot, making lightweight kilts essential. *Hadena perplexa* was high on our list of wants, but most specimens had been bleached almost white by the sun and salt spray, and it was difficult to find any of the requisite tawny-brown shade.

That night we ran the light-traps, and were pleased to take a fine series each of *Agrotis exclamatoris* (not a species I see every year), while being careful not to remove so many as to threaten the population. I next had the good fortune to net a *Charanyca trigrammica*, which one of my companions was particularly desirous to obtain. Naturally, I insisted that he should have it, having earlier boxed a rather better specimen for myself when no-one was looking.

The weather forecast was poor for our final night. We sugared in the sultry dusk, and thereby lured the moth that was easily the highlight of the whole expedition – a species which we had hardly dared hope for – a perfect *Agrotis puta*! Then the heavens opened, putting paid to all further work, so we made for the capital to celebrate this prize capture in style . . .

Next morning we set off for home. It had been a successful trip. Each of us had seen many new species, each had his own small triumphs. Honour was more than satisfied; we dropped her back at King's Cross on our way

north. As we reached the Scottish border with our precious cargo, already planning the next excursion south, we were amazed to meet coming the other way the same van that we had seen on our outward journey.



“Apart from *Cucullia verbasci* and *Biston betularia* I would say that they were speaking Gaelic!”

Drawing by Alan Turner (01277) 624647

Hunting behaviour of *Dipogon subintermedius* (Magretti) (Hym.: Pompilidae)

I found *Dipogon subintermedius* to be quite numerous in Chatsworth Park, Derbyshire (VC57) while studying aculeate Hymenoptera there around 1983. It hunted on the surfaces of large, dry, standing oak trunks in bright sunshine. On two occasions I observed the wasp seemingly attempt to lure its prey, the spider *Segestria senoculata* (L.), out of its hiding place. The web of these spiders spreads over the surface of the trunk around a small silk tube, in which the spider hides. *D. subintermedius* landed on the bark beside the web and flew quickly onto the edge of the web, with its wings vibrating. The movement on the web attracted the spider, which emerged. At this moment the wasp attacked the spider.

I observed this behaviour on two occasions, but in neither case was the wasp successful, though it did seem to be a promising strategy for catching *S. senoculata*.— STEVE GARLAND, Bolton Museum, Art Gallery & Aquarium, Le Mans Crescent, Bolton, Lancashire BL1 1SE.

Return of the White Admiral *Lagoda camilla* L. (Lep.: Nymphalidae) to north-west Kent

The history of this butterfly in north-west Kent up until 1960 has been summarised by Chalmers-Hunt (1961, *The butterflies and moths of Kent*, Vol. 1), with later records, such as they are, noted by Plant (1987, *The butterflies of the London Area*, LNHS). Broadly speaking, this butterfly was quite common in Kent during the 18th century, but declined during the first half of the 19th century, becoming almost extinct around 1860. There are very few records after this date until the period 1925-1937 when it reappeared in many woodland areas, extending its range from the west, with the number of colonies peaking around 1945.

In north-west Kent it was reported as "common" at Keston and West Wickham (presumably in Spring Park Woods). J.F. Owen (1950), writing in the pages of this journal on the butterflies of Shoreham and Eynsford, declared that the White Admiral ". . . occurred in all woods where honeysuckle abounds and appears to be steadily increasing . . .". This was a singularly unfortunate remark, as the butterfly declined markedly after this date! Very few sightings were made in the area over the next 30 years – Magpie Bottom in 1953, High Elms in 1961 and Spring Park Woods in 1965 were probably vagrants as there was no evidence of the butterfly breeding, despite apparently suitable habitats.

A town centre sighting in Bromley in 1982 was followed in 1983 by a single butterfly reported in Meenfield Woods, near Shoreham on 19 July, with further sightings – each of a single butterfly – in 1984 and 1985. In 1986 there was a sighting in Sparrow Wood, close to the centre of Orpington. A further White Admiral was noted in Sparrow Wood and in Petts Wood (a National Trust woodland also close to Orpington) in 1995. During 1996, there were numerous sightings of the White Admiral in Petts Wood, between 17 July and 4 August by several observers including the National Trust Warden, David Clarke. At the same time several individuals were reported from High Elms woodland, some three miles from Petts Wood.

The woodlands of north-west Kent merge with the suburban sprawl of south-east London and are frequented by many naturalists. Amateur botanists and ornithologists regularly supply butterfly records for these woods and it is highly unlikely that an insect such as *camilla* would escape attention – on the contrary, when sightings are made they are soon drawn to the attention of the local recorders. Without confirmed records of larvae, breeding of the butterfly cannot be claimed, but the number and concentration of records in two woodlands does suggest that this is a possibility.

Although the appearance of this butterfly is predominantly of local interest, it does raise interesting questions as to the source of the colonisation. Perhaps the butterfly has remained over the years at very low

densities? If not, colonists must have faced a daunting journey towards the Orpington area – open farmland, suburban gardens and the M25 motorway having to be negotiated, with individual butterflies needing to fly many miles from the nearest known colonies. The contraction and spread of the range of *camilla* has been well documented, and explanations for the phenomenon, at least on a macro scale, have included climatic shifts combined with changes in the patterns of woodland management. Interesting explanations of changes in range are given by Pollard (1979, *Ecological entomology*, **4**: 61-74) and Dennis (1992, *The ecology of butterflies in Britain*), but whatever the answer, there is considerable pleasure in seeing such an attractive butterfly attempting to establish itself in one's local patch.— PAUL SOKOLOFF, 4 Steep Close, Green Street Green, Orpington, Kent BR6 6DS.

Recurrence of *Callicera aurata* Rossi (= *aenea* Fabr.) (Dip.: Syrphidae) in North Hampshire

On 10 July 1996 a specimen of *Callicera aurata* Rossi flew to m.v. light at Wake's Cottage, Selborne, along with 302 moths of 94 species. During that part of July, significantly enough, the blossom on next-door's Tulip Tree *Liriodendron tulipifera* had been attracting large numbers of Diptera and Hymenoptera. When I reported the first Selborne occurrence in August 1995 (*Ent. Rec.* **108**: 48), I raised the problem that this rare insect was associated with pine, of which there is a local paucity, but recent published work notes that larvae have been found in a water-filled rot-hole in beech (Stubbs, 1996, *British Hoverflies, Second Supplement*). Mr Nigel Wyatt of the Natural History Museum kindly identified both the 1995 and 1996 specimens.
— ALASDAIR ASTON, Wake's Cottage, Selborne, Hampshire GU34 3JH.

EDITORIAL COMMENT: As far as I am aware this is the first record of *Callicera aurata* attracted to a m.v. trap, and it is certainly one of the most interesting records of hoverflies attracted to m.v. light. *C. aurata* is certainly a scarce species, but since the recording scheme became active again in 1991 it has become apparent that it is by no means as rare as was formerly believed. Records of adults suggest that it is by no means confined to woodland, with records from heathland and even a suburban garden; it therefore seems likely that a variety of trees support larvae, but rot holes in beech are almost certainly the main larval habitat. As far as I am aware, there is no association with pine, although a relative *C. rufa* is known principally from Caledonian pine forests. The recording scheme would welcome further records of hoverflies at m.v. light and I would be happy to identify material if accompanied by data comprising date of capture, place of capture and a four figure grid reference.— ROGER MORRIS, 3 Lindale Mount, Wakefield, West Yorkshire WF2 0BH.

Collecting notes, 1996

1996 would have been a poor season indeed had it not been for the arrival of migrant moths in June and my first encounter with Goat Moth *Cossus cossus* L. larvae later in the year. More about them later. Cold, clear nights prevented serious trapping until a trip to Cornwall at Easter produced a very white form of Early Grey *Xylocampa areola* Esp. and a range of other common, but very welcome, spring moths.

On 7 June I arrived home in Somerset in warm, thundery weather to see what appeared to be a shower of snow over the paddock. The snowflakes proved to be Painted Ladies *Cynthia cardui* L. and Silver Y moths *Autographa gamma* L. which were flying around in dozens and continued to do so until dark. The trap was switched on at dusk and by 11.30pm had attracted the first Bordered Straw *Heliothis peltigera* D.&S. and numerous Rush Veneer *Nomophila noctuella* D.&S. By the following morning, the trap contained four Small Mottled Willows *Spodoptera exigua* Hb., a further three Bordered Straws and over 100 each of Silver Y and Rush Veneer.

At about midday on 8 June I noticed numbers of Painted Ladies flying across the paddock. At 1.10pm I sat down in the warm sunshine to count the butterflies. All were heading 64° east-north-east and flying at a tangent to the stiff breeze from the north-west. In twenty minutes I counted 178 *cardui* travelling either singly or in "pods" of up to five individuals. The movement was over by 3.30pm when only a few "resident" *cardui* flew at random over the paddock. In a lifetime of entomological experience, the sight of all those butterflies determinedly flying past will stand out as a particularly vivid memory.

Although I was unable to take full advantage of the 1996 migration the final score for my garden trap is set out below.

| | |
|--|----------|
| Gem <i>Orthonama obstipata</i> F. | 3 |
| Pearly Underwing <i>Peridroma saucia</i> Hb. | Numerous |
| Delicate <i>Mythimna vitellina</i> Hb. | 3 |
| White-speck <i>M. unipuncta</i> Haw. | 1 |
| Small Mottled Willow <i>Spodoptera exigua</i> Hb. | 27 |
| Bordered Straw <i>Heliothis peltigera</i> D.&S. | 19 |
| Scarce Bordered Straw <i>H. armigera</i> Hb. | 2 |
| Ni Moth <i>Trichoplusia ni</i> Hb. | 4 |

I reared broods of Gem, Small Mottled Willow and Pearly Underwing. I hoped to "keep the Gem going" for a few generations but I lost the stock when the interior of the car overheated whilst in France. I also lost some interesting larvae of *Callimorpha dominula* L. and a toad. The new car has air conditioning!

On 19 June, Richard Clinton and I set out for Scotland to look for montane birds and to trap moths on the hallowed ground around Newtonmore. The bird observation went well with plenty of Ptarmigan, Dunlin, Golden Plover and Dotterel but a biting north wind prevented moth trapping. The only moth of note was the Broad-bordered White Underwing *Anarta melanopa* Thunb. which flew in the cold sunny periods in the hills above Dalwhinnie (where I was the *only* person carrying a kite net for use in the snow and sleet!). We obtained eggs from a female *melanopa* and the larvae did well on sawallow until left with a relative whilst RC went on holiday.

On 11 July, I left for France for a holiday based near Cordes-sur-Ciel in Tarn. Once again cool, clear nights adversely affected the moth trapping around our gîte, but the moths did turn up (and there were lots of them) proving interesting. Amongst the 11 species of Sphingid was a single male *Marumba quercus* D.&S., my first encounter with this species. I searched the local oaks in vain for larvae. Amongst the “non-British” species were noctuids such as *Lamprosticta viridana* Walch and *Ephesia fulminea* Sc. and geometrids including two pretty little waves *Ptychopoda moniliata* Schiff. and *P. ostrinaria* Hb. Scarce Dagger *Acronicta auricoma* D.&S. was common and I obtained ova from a couple of females. The larvae are polyphagous showing a marked preference for the leaves of blackthorn, plum and apple. They are easily reared.

Moths with names more familiar to British collectors included the Striped Hawk *Hyles lineata* Esp., a white form of the Speckled Footman *Coscinia cribraria arenaria* Lempke, Purple Cloud *Actinotia polyodon* Cl., Light Crimson Underwing *Catocala promissa* D.&S. and Alchymist *Catephia alchymista* D.&S. I recorded 43 species of butterfly on the farm. The only one which caused temporary field identification problems was a spotless ab. *alconides* Auriv. of the Large Blue *Maculinea arion* L. (apart from the Pale/Berger’s Clouded Yellows, that is, and I’ve more-or-less given up trying to sort them out!).

The trap also produced a female Goat Moth which, in turn, produced a huge number of eggs. By 29 July, all had hatched and I turned in panic to Friedrich (1986, *Breeding Butterflies and Moths*, Harley Books) who recommended that the larvae be reared in a box layered with wood shavings, brown bread (wholemeal) and slices of apple. This did not appear to me to be a reasonable substitute for the wood of oak or birch and I added the larvae with considerable scepticism before leaving for a week in Birmingham. On my return, my worst fears were confirmed. A smell of fermented apple lead to boxes of mould which had become home to every fruit fly in Somerset! Assuming the larvae to be dead, I left the boxes untouched *and* unlidded. A couple of days later, I sat at my desk to write a few letters. Lifting a pad, I discovered three guilty-looking Goat larvae attempting to eat my furniture. I

rummaged in the boxes – not only had they survived, but they had tripled in size!

From then on, the larvae never looked back. I continued with the apple, though the larvae showed a marked preference for fresh beetroot which stood up well to their ravages. Turnip was also reluctantly accepted. The larvae soon became too large to hide in excavations in the fruit. Instead, they spun silken tubes within the wood shavings from which they emerged to attack the apple. As I write (January 1997) 144 larvae are safely tucked-up asleep in loose silken cocoons. How I miss the unique combination of goat-smell and cider, the fruit flies, being bitten and then spat at by ungrateful, ugly wildlife!

After all that, the 1996 season slowly petered out. A trip to Cornwall in late August produced more Small Mottled Willows and a few Clouded Yellows *Colias croceus* Geoffr. but trapping was spoiled by yet more cool, clear nights. A few more immigrant moths appeared at home in September and October, but numbers of resident moths were low. I added only the Deep-brown Dart *Aporophyla lutulenta* D.&S. to the garden list.

Even a poor season leaves memories. Watching Minotaur beetles *Typhaeus typhoeus* L. on the Quantocks in February, those Painted Ladies in June, a Dotterel with chicks on a Scottish mountain, catching French butterflies in baking sunshine in July and catching Grey Bush-crickets *Platycleis denticulata* Panzer with my daughter on the sandhills overlooking the sea in August. And who could ever forget those Goat Moth larvae?

– M.D. BRYAN, "Extons", Taunton Road, Bishops Lydeard, Somerset TA4 3LR.

***Zygaena filipendulae* L. and *Z. trifolii* Esp. (Lep.: Zygaenidae): aberrant colonies**

Z. filipendulae is a species in which aberrations are usually rare. In May 1974 this species and *Z. purpuralis* Brün. were abundant on Fanore Strand, Co. Clare, Ireland, and it immediately became apparent that an extraordinary number of the former were of confluent forms in which the pairs of red spots tended to coalesce laterally, culminating in ab. *cytisi* Hb. I estimated that over 30% of the specimens exhibited this feature to some degree, the commonest expression of which was for the distal pair of spots to form a large blotch and the other pairs to show some enlargement of the individual spots laterally, but to remain separate by virtue of the black vein between them. Nevertheless, many of the specimens had all three pairs of spots conjoined laterally. Subsequent examination has revealed a tendency for the basal spots, and especially the costal one, to extend up the costa, frequently to reach the level of the median pair of spots, and in one of my ten specimens coalesces with it. Perhaps, surprisingly, there was no evidence of other expressions of enlargement of the spots longitudinally.

Between Fanore Strand and the coast road is a well-trampled grassy strip, and beyond the road at the foot of the hillside is a different habitat characterised by tall grass, and in May 1974 many of the grass stems were adorned with *filipendulae* cocoons, mostly with pupae or pupating larvae. Moths here were later in emerging, and all were normal as were the moths which emerged from collected cocoons.

I returned to Fanore Strand in May 1975; *filipendulae* were much less in evidence and no confluent forms were observed; in May 1987 all specimens seen were normal. However, I understand that Bernard Skinner has come across these aberrant *filipendulae* at Fanore Strand in other years than 1974.

A somewhat similar outburst of aberrant forms occurred in a small, isolated colony of *Z. trifolii* on the chalk escarpment at Wrotham Hill, Kent in 1952. The colony was revisited after the War, in 1949, 1950 and 1951. On 7 June 1951 a specimen of ab. *glycirrhizae* Hb. (the apical spot and the median pair coalesced) was found, and another on 20 June, all other individuals seen being normal. In late May and early June 1952 the moths were much commoner than had been noted in previous years, and confluent specimens were as common, perhaps more so, than normal ones, and included many ab. *minoides* Selys (all spots joined to form an irregular blotch). Despite several visits being made in 1953, *Z. trifolii* was scarce and no aberrant forms could be found, and the only noteworthy specimen noted subsequently was an ab. *minoides* in 1960, after which time the locality was rarely visited; road making and scrub invasion has almost destroyed the original habitat.

E.B. Ford (*Butterflies*, 1945 and *Ecological Genetics*, 1964) considers this phenomenon of the sudden appearance of aberrant forms in a colony, stating that it is invariably accompanied by a great increase in numbers of individuals, the aberrations disappearing with the colony returning to normal size. In the latter work in which a study of a fluctuating colony of *Melitaea aurinia* Rott. over a long period is described, the author states that it is a depressing fact that no other equally comprehensive observations of such events had been reported; nor have I seen reference subsequently, hence my recounting my limited observations on these two *Zygaena* colonies.

– B.K. WEST, 36 Briar Road, Dartford, Kent DA5 2HN.

A successful hibernated Camberwell Beauty *Nymphalis antiopa*, West Sussex, April 1996?

8 April 1996 was a fine spring day, with temperatures reaching 15°C for the first time in the year. It was the ideal day to visit Chiddingfold Forest on the Surrey/West Sussex border to observe the early flights of the Brimstone *Gonepteryx rhamni* and the spring Nymphalids. I also knew of a patch of Wild Daffodils *Narcissus pseudonarcissus*, as an added incentive for my wife to accompany me on this occasion.

Reaching the relevant Forest Enterprise wood at 10.30am we slowly made our way towards the daffodils, which was some distance from where the car was parked. Brimstones and Commas *Polygonia c-album* were already on the wing. Whilst walking along a now disused timber extraction road, which runs in an east-west direction, we came upon a group of willows *Salix* sp. which had, interestingly, recently been pollarded. It was nearly half-past eleven and I was contemplating the impact of this form of willow management on the Purple Emperor *Apatura iris* when suddenly a large fast-flying Nymphalid was upon us, from the north out of the lightly dappled shade of a group of leafless standard oaks *Quercus* sp.

Fortunately we had just reached a newly-created south-facing clearing in full sun, so after coming through less hospitable terrain, this large Nymphalid was happy to stay, if only briefly, in the full warmth of the spring sunshine. It circled us two or three times, at low elevation, and this enabled us to identify it, whilst still on the wing, as a Camberwell Beauty *Nymphalis antiopa*. We were both gripped with excitement, wondering what this fine insect would do next. It was a truly lucky day, for lo and behold, it settled down beautifully on a bed of dried oak leaves on the bank of a roadside ditch, giving us a great opportunity to have a careful close-up view.

My wife peered through her close-focus binoculars and I approached as close as I dared to admire this fine insect as close quarters. It was noticeable that the borders were very white in appearance with very little dusting of black scales, as sometimes seen on freshly emerged specimens. This suggested it being of Scandinavian origin rather than one from further south in Europe, as the colouration of the border is supposedly connected with the latitude of the breeding area, specimens becoming progressively more yellow on their border as one travels south.

Although far from knowledgeable on this British rarity I would think this is a more plausible explanation of examples found in Britain invariably having pale borders than that expounded by some authors of the borders having a scale defect causing its pale appearance and this being more prevalent in Scandinavian specimens.¹ Such a scale defect presumably refers to a pathological variety, being a deformation of the scales. In some years these pathological varieties are frequent in such species as the Meadow Brown *Maniola jurtina* and less frequently in the Silver-washed Fritillary *Argynnis paphia*, but normally the pale areas only occur in patches, of various sizes.

The Sussex Camberwell Beauty was in a very good condition for a post-hibernated specimen. There were no pieces missing from its wings, although certainly a few scales were detached from the areas of its deep maroon colour, giving the large veins on the discal cell in particular, a shiny scale-less appearance.

It was time to stop admiring and get the camera ready! A basking Camberwell Beauty and my camera annoyingly packed away in my

rucksack! Curse my inefficiency, but who would have thought of a successfully hibernated Camberwell Beauty amongst the wealth of Brimstones and Commas on the wing? A cursory rummage in the rucksack resulted in the inevitable, the Camberwell Beauty lifted off its bed of warm dry oak leaves and rising high in the air to continue its southward flight. This time its mode of flight was different from the fast erratic approach to the sunlit clearing. It gently glided, quickly gaining altitude amongst the tall trees of the mixed forest, almost as if searching, perhaps for an odorous sap run, or a tall flowering willow, which at this time were at the peak of their flower production.

And so it wafted away through the trees, never to be seen again, despite us spending some time in the area hoping to catch another glimpse. The magnificent insect was one of about fifty spring 1996 recorded sightings, following the unprecedented "invasion" of late summer 1995 when approximately three hundred and fifty were recorded. With only a 14% survival rate amongst the British Camberwell Beauty population that entered hibernation over the 1995-96 winter, chances of a successful spring paring and a British summer 1996 progeny were negligible. Successful hibernation was probably due to the fact that the 1995-96 winter was relatively severe (in comparison with recent British winters) and more comparable to the inevitably harsh Scandinavian winters; these benefit the Camberwell Beauty population by counteracting fatal fungal and bacterial infection, which would be prevalent in the mild damp winters more often than not experienced in the British Isles.

This was not my wife's first experience of the Camberwell Beauty and I believe she must be almost unique in sighting both pre- and post-hibernated examples of this rare immigrant. On 8 August 1995 she spent almost an hour observing a fine fresh example (interestingly with notably more yellow borders) feeding avidly from a *Buddleia* flowering in the grounds of a hospital in Musselburgh, East Lothian. I was away in the hills at the time, watching Scotch Argus *Erebia aethiops* not knowing that I would only have wait eight months before joining the exclusive "*antiopa club*".—KEN WILLMOTT, 3 Yarm Court Road, Leatherhead, Surrey KT22 8NY.

EDITORIAL COMMENT: Although not in any way denying the possibility that this specimen of the Camberwell Beauty may have successfully overwintered in Britain, I would suggest that some caution is required in interpreting Ken Wilmott's observation; the addition of a question mark at the end of the title of his note was an editorial decision. Newly arrived immigrant Lepidoptera are typically in pristine condition and this, therefore, is no indication of their origin. There was a large number of Camberwell Beauty sightings in Holland during late March and early April 1996 and much discussion and disagreement concerning the origin of these; one or more of these continental specimens could easily have flown across to

southern England and, indeed, an example was noted at Hoddesdon, Hertfordshire, on 26 March by Rev. T. Gladwin. The rather early date, whilst supporting the hibernation theory, is not a bar to the possibility of it being a primary immigrant. A wander through past literature reveals a good many sightings of Painted Lady *Cynthia cardui* and moths such as *Agrotis ipsilon* as early as February in some years – all individually held by observers to have hibernated but collectively indicating immigration rather more strongly. On the other hand, I am informed (Bernard Skinner, *pers. comm.*) that two separate individuals were discovered in garden sheds in the spring of 1996, providing rather more positive evidence of over-wintering in Britain.— COLIN W. PLANT.

Pre-publication announcement – *Butterflies of Essex*

The book *Butterflies of Essex* will be published in mid-1997, jointly by the Essex Wildlife Trust and Butterfly Conservation (Cambridge & Essex Branch). Written by myself and with a foreword by Gordon Benningfield, the book will present detailed accounts of and distribution maps for all species and will be illustrated by 40 full-colour photographs. A summary of the status of every species of moth in the county will also be provided by Brian Goodey, the County Lepidoptera Recorder. The book will have approximately 200 pages. Retail price after publication will be £22, but for copies reserved before the end of June the price falls to £15. If you wish to reserve a copy, please write to me. DO NOT SEND MONEY NOW – you will be invoiced when the book is delivered.— DAVID CORKE, Tye Green House, Wimbish, Saffron Walden, Essex CB10 2XW.

Request for information on Mazarine Blue *Cyaniris semiargus* Rott. specimens

I am presently conducting research into the long-extinct colony of the Mazarine Blue butterfly *Cyaniris semiargus* Rott. (Lep.: Lycaenidae) at Epworth in Lincolnshire, originally announced by Samuel Hudson in 1860.

If anyone possesses or knows of examples of the butterfly bearing the key words “Epworth”, “Lincolnshire”, “Lincs.” or “Hudson” on the data label I would be deeply grateful if they would contact me.

— W.E. RIMMINGTON, 8 Riverside Drive, Sprotborough, Doncaster DN5 7LE.

Melanism in *Biston betularia* L. (Lep.: Geometridae)

The late Denis F. Owen was working on melanism in *Biston betularia* in a joint study with Bruce Grant in Williamsburg. Denis made several public appeals for records and there may be people with information who do not know where to send it. This information should now be sent to Dr Bruce Grant at the Department of Biology, P.O. Box 8795, Williamsburg, Virginia 23187-8795, USA.— JOHN OWEN, Eastbridge House, Dymchurch, Kent TN29 0HZ.

***TETRIX SUBULATA* L., SLENDER GROUND-HOPPER
(ORTH.: TETRIGIDAE) IN NORTH LANCASHIRE, VC60**

JENNIFER NEWTON

94 Main Street, Hornby, Lancaster LA2 8JY.

ON 26 APRIL 1987, one adult ground-hopper was found swimming in a ditch on Silverdale Moss, grid reference SD474774, a remnant of fen vegetation on the edge of a largely drained and reclaimed moss in North Lancashire, close to the border with Cumbria. Although the pronotum of the specimen barely reached the tips of the hind femora, the hindwings projected just beyond the pronotum. It was finally identified by Judith Marshall as the short-winged form *bifasciata* (Herbst) of *Tetrix subulata* (L.) and is now held at the British Museum (Natural History).

Further searches turned up no more specimens of *T. subulata*, either here or on other mosses in the area (although *T. undulata* Sowerby is known from a number of sites nearby). In 1992 Hawes Water Moss, SD4776 about a kilometre to the south of Silverdale Moss, was acquired by English Nature as an extension to the Gait Barrows National Nature Reserve. This moss, lying to the south of Hawes Water tarn, comprised an area of very wet fen peat, largely under alder-willow carr *Alnus glutinosa* and *Salix cinerea* with some reed-bed *Phragmites australis*. In the winter of 1994-95, a great deal of the alder and willow was coppiced.

In 1995 a Malaise trap was set up on the western edge of the moss at SD474764, just east of the main dyke and a fringing alder woodland. The trap was in place from 13 April to mid-December, with samples removed on six occasions, 26 June, 10 July, 27 July, 16 August, 16 September and mid-December. The first three samples contained no Orthoptera, but on 16 August there was one male and one female *T. subulata*, on 16 September there were 19 males and 15 females of *T. subulata*, one male *T. undulata* and two *Tetrix* nymphs, while in mid-December there were two male and one female *T. subulata*. All 39 adult *T. subulata* were of the *bifasciata* form, separable from *T. undulata* by the hindwings protruding just beyond the tip of the pronotum and the much less pronounced crest to the pronotum, which also lacks the dorsal arching of *T. undulata*. Without careful examination they could easily be passed over as *T. undulata*. Voucher specimens are held at Liverpool Museum (National Museums and Galleries on Merseyside) and Tullie House Museum, Carlisle.

In 1996 no Orthoptera were found on visits to the site on 24 April and 6 May. On 16 August, in addition to *Chorthippus brunneus* Thunberg, there were a number of *Tetrix* nymphs and one adult *T. subulata*. On 14 September the first and only typical, long-winged specimen was found (a male), in addition to six f. *bifasciata* (three males and three females). All specimens were found in open areas where the ground was either moss-

covered or bare peat by open water. In the mossy areas there were small scattered shoots of cyperus sedge *Carex pseudocyperus* and greater tussock-sedge *C. paniculata*, yellow flag *Iris pseudacorus*, common reed *Phragmites australis* and creeping bent *Agrostis stolonifera*. These open areas occupy a fairly small proportion of the whole, where bulky sedges, grasses and herbs such as watermint *Mentha aquatica*, gipsywort *Lycopus europaeus*, greater skullcap *Scutellaria galericulata* and meadow-sweet *Filipendula ulmaria* mostly form a closed canopy. *Salix cinerea* and *Alnus glutinosa* are regrowing vigorously. The long-term aim is, however, to manage the site for fen and reed-bed.

It is interesting that so many *Tetrix* specimens were caught in a Malaise trap, and no *C. brunneus*, although *C. brunneus* was plentiful at the site on 16 August 1996. Haes (*pers. comm.*) has observed that in Cornwall *T. subulata* moves from very wet sites in early autumn to overwinter in drier sites. Adult *C. brunneus* presumably die on the site.

These records of *T. subulata* from Silverdale and Hawes Water Mosses are the most northerly so far from Britain, although it has been found further north in Ireland. Last century it was known from Thorne Moors, VC63, previously its most northerly known locality, and in 1983 it was found by the Dee near Overton, Clwyd, VC50 (Marshall and Haes, 1988). Since 1988 there have been records from VCs 54 (N. Lincolnshire, update to a pre-1960 record), 56 (Nottinghamshire), and 57 (Derbyshire) (Haes, 1991).

Gait Burrows NNR stands out as an exceptional site for Orthoptera in the north of England, with six species. The limestone pavement and associated scrub and woodland carry *Myrmeleotettix maculatus* (Thunberg), *Chorthippus brunneus*, *Omocestus viridulus* (L.) and *Tetrix undulata*. *Chorthippus parallelus* (Zetterstedt) and *O. viridulus* flourish in the black bog-rush *Schoenus nigricans* and small sedge mire at the edge of Hawes Water, while the two *Tetrix* species occur on Hawes Water Moss with *C. brunneus*. Close by, on Arnside Knott in Cumbria, the bush crickets *Pholidoptera griseoaptera* (De Geer) and *Meconema thalassinum* (De Geer) replace *C. parallelus* and *T. subulata* to bring this site's total to six species and the total for grid square SD47 to eight.

My thanks to Rob Petley-Jones and Neil Robinson who supplied me with the Orthoptera specimens from the Malaise trap. Thanks also to English Nature for special permission to visit Hawes Water Moss, a sensitive area of restricted access.

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Brown Hairstreak *Thecla betulae* L. (Lep.: Lycaenidae) – unusual egg clusters, myths and misconceptions

In all of the older books that I referred to concerning egg-laying by the Brown Hairstreak, it says that the eggs are laid *singly* in the angle formed by a thorn and the stem on Blackthorn *Prunus spinosa*. This myth is perpetuated in several of the more recent publications. Exceptions are the works of Jeremy Thomas. In Thomas & Lewington (1991, *The Butterflies of Britain and Ireland*) it states that it is not unusual to find two, three or even four eggs on the same twig (see illustration on p. 61 of that work where two eggs are shown fairly close together near a fork in a blackthorn stem) and by Heath, Pollard and Thomas (1984, *Atlas of Butterflies in Britain and Ireland*, Viking Press) who state that the eggs are laid in “ones and twos”. Emmet and Heath (1989, *The Moths and Butterflies of Great Britain and Ireland*, Vol. 7, part 1. Harley Books) state that eggs are sometimes found in twos and threes.

However, whilst searching for eggs of the Brown Hairstreak over the last two years, as part of the *Butterflies for the New Millennium* map, I have come across several occurrences of multiple eggs that enable the above statements to be amplified.

More than one egg along the same twig, but not in contact, are common. Pairs of eggs in contact occur in the ratio of 1 in 20 (3 in 61 sightings) as recorded by myself and Maurice Edmonds over the last two years: 1.5m from the ground on an east-north-east-facing hedge (SS 779035) in the fork of a one-year-old offshoot on a three-year-old stem on 9 December 1996; on a west-south-west-facing hedge about 1.4m from the ground (SX 699883) on 5 January 1997, and on a south-south-east-facing hedge on 11 January 1997 (SS 781033).

On 15 January 1996, just south of Upton Pyne, Devon, I came across a cluster of three eggs arranged in a tight equilateral triangle in the fork of a one-year old offshoot from a two-year old stem of Blackthorn (SX 907967), I had previously spent about 40 minutes searching a 200m length of an east-south-east facing hedge to no avail. The eggs were about 0.6m off the ground; there was one other egg close by, but then I stopped searching. Amongst other Devon recorders with whom I have discussed my findings, Maurice Edmonds found three eggs arranged as described above in 1994 and Graham Madge informs me that occasionally he has found three eggs together (see below).

My best-ever find, however, was four eggs together on a west-south-west-facing hedge about 1.5m from the ground (SX 694879) on 5 January 1997. In this last example, three eggs were arranged in a straight line, all touching, with the fourth egg just above and separated from the median egg. In 1996, Graham Madge recorded a female laying an egg at the apex of an equilateral triangle of three eggs. Simon Mitchell has on one occasion found four eggs

together and they were arranged in contact like a chain – one up, one down, one up, one down. The ultimate record, however, is that of Tony Hawtin who found five eggs within a diameter of 1.2cm, with a sixth egg 1.5cm away and another 4.5cm away on 11 November 1987.

The question is, are these multiple occurrences the eggs of one butterfly, or of separate butterflies? Graham Madge observed that in the “four-egg situation” noted above, the female fluttered about and alighted briefly here and there, before crawling in behind some leaves near the base of the hedge and remained there for a few seconds. She then re-emerged, flew to the top of the hedge and disappeared. To him, it seemed as though the female deliberately selected the egg-laying spot as if she already knew that it was a highly favourable site.

Further previously unrecorded observations on Brown Hairstreak egg laying include a single egg on a 1cm thick stem of blackthorn found by myself on 3 February 1997. Maurice Edmonds notes that occasionally eggs can be found *under* the blackthorn fork. Maurice has also found eggs laid on a honeysuckle stem entwined around blackthorn.

North Devon is commonly stated (eg. Emmet and Heath, *op. cit.*) to be the stronghold of the Brown Hairstreak in Devon. This is certainly not true since at least the 1960s (see distribution map in Bristow, Mitchell and Bolton (1993, *Devon Butterflies*, Devon Books)), nor borne out by the recent recording for the *Millennium Atlas*. Searches by Kevin Bastow and Graham Madge in North Devon during the last two years were mostly unsuccessful. The major stronghold is mid-Devon – eggs have been recorded by Graham Madge and myself on every tetrad (well over 100 tetrads) within a radius of 14km of my house (SS 7703).

Finally, Stainton (1857, *A Manual of British Butterflies and Moths*, London) notes that larvae also feed on Birch *Betula alba*. I must admit that I have never looked for the eggs on birch and know no one who has seen the female egg laying on this tree. I assume that Stainton's record is erroneous. – C.R. BRISTOW, Davidsland, Copplestone, Devon EX17 5NX.

A precisely timed case of nocturnal migration by *Aeshna cyanea* (Müller) (Odonata: Aeshnidae)

Migrating dragonflies are not infrequently recorded at lighthouses and in m.v. light-traps used for trapping moths. However, there is very little information on the time of arrival of such individuals at light and thus the time of night that migration occurs. For this reason the following instance is of interest.

During the night of 2-3 August 1996, I was running a mains-operated m.v. moth-trap in a garden on a housing estate in the village of Tarvin in Cheshire, VC58 (OS Grid reference SJ 4866). As numerous guests were staying overnight in the house and the night was fine and overcast, I pitched

my tent on the lawn next to the moth-trap and settled down for the night. At precisely 03.40 hrs, I was suddenly awakened by a vigorous scraping and rustling sound coming from the vicinity of the light-trap some three metres away. Investigation revealed a fine female Southern Hawker *Aeshna cyanea* Müller, 1764), rattling against the illuminated asbestos wall immediately behind the light-trap. As the trap was more than a mile from the nearest open water it is probable that this individual was pulled into the light while actively migrating at this early hour. However, none of the 64 species of moth in the trap next morning were particularly indicative that a long-distance migration of other insects was in progress.

I am grateful to Betty Smith for identifying the species. – K.P. BLAND, 35 Charterhall Road, Edinburgh EH9 3HS.

Lacewings in light traps: a request

In my capacity as organiser of the British Isles Recording Scheme for Neuropteroidea, I am keen to examine samples of lacewings Neuroptera (= Planipennia), Raphidioptera and Megaloptera as well as scorpion flies (Mecoptera) taken by lepidopterists in their light traps. Data will be used, primarily, to strengthen the existing national distribution maps but will also be of value in current research into lacewing phenology.

The familiar green lacewings (Chrysopidae) – which comprise several species not immediately separable by eye – are doubtless recognised by most people. Less familiar are the brown lacewings (Hemerobiidae) and the sponge flies (Sisyridae); many species in these two families are frequent visitors to light traps. The minute, white Coniopterygidae resemble white flies and are usually overlooked. If in doubt, send it to me; I shall not complain if it is not a lacewing.

Lacewings may be picked up in fingers or forceps without causing damage or they may be collected in a pooter or into glass tubes. Samples should be killed in ethyl acetate or else placed in the freezer for a while. Ammonia is not recommended. Pinning is not necessary. The entire sample from one night should be placed in a paper triangle and left to dry (if enclosed in a box before they are dried the specimens will develop mould). Triangles may be sent to me as convenient, either on a regular basis or as a large batch at the end of the year, suitably packed to prevent damage in transit. Samples are needed from all areas, including domestic gardens, woodlands, wetlands, mountain regions, etc. Samples are especially needed from Scotland and Ireland and from the English counties of Devon, Somerset, Wiltshire, Berkshire, Northamptonshire and Westmorland.

A list of species identified will be provided to each contributor in due course. – COLIN W. PLANT, 14 West Road, Bishops Stortford, Hertfordshire CM23 3QP.

Unusual behaviour in *Papilio ulysses* L., 1758 (Lep.: Papilionidae)

The process whereby butterflies obtain salts by probing damp sand or mud with their proboscis is well documented. In suitable places they may congregate in very large numbers, particularly (though not exclusively) in the tropics and the sight of a carpet of coloured wings shimmering in the sunshine on a mud bank is a memorable experience. Rotten meat, fish, urine and faeces are commonly used as bait to attract butterflies in the tropics and I well remember being involved (in an administrative capacity) in the filming of a "Wildlife on One" programme about Sulawesi some ten years ago. It was necessary to get a shot of butterflies "puddling" by the River Tumpah and this was effected by my urinating on the river bank an hour before filming was due!

Large *Papilio* species frequently "puddle", usually sitting on the ground with wings closed and proboscis extended. Unusual behaviour which, despite long periods in the tropics, I have never seen before, was recently observed in the Solomon Islands. On 15 September 1996, I was in the bar of the Mendana hotel in Honiara, Guadalcanal, which is open to the sea. A fresh male *Papilio ulysses* was seen flying slowly over the sea, several metres from the shore-line and parallel to it. On close examination, it was seen to have its proboscis extended, with the tip in the water, apparently imbibing sea-water. Some fluctuation in water level was caused by small waves lapping the shore and the butterfly skilfully avoided being swamped by flying and hovering just above the water, always keeping its proboscis in the water. It was observed for five full minutes, before it flew away – possibly disturbed by the close attention paid to it by myself and colleagues.

It is interesting that Charles Morris Woodford, a Naturalist who lived in the Solomon Islands and who became the first Resident Commissioner of the Territory in 1896, observed the attraction of salt water to *ulysses* and other swallowtails more than a century ago:

"Perhaps you did not know that butterflies were fond of salt water. Yet look at that large black one with the swallowtails sitting on the wet sand only just clear of the water, and greedily imbibing the moisture through its long tongue. I pop the net carefully but quickly over him while he is still intent upon his draught. Black, did I say? Well, he looked black with his wings folded over his back, but the instant the net closed round him he showed his beautiful upperside of bright blue, with deep velvety black border. It is *Papilio orsippus* (the race on Guadalcanal is known as *Papilio ulysses orsippus* Godman & Salvin, 1888), one of the most beautiful insects of the Malayo-Australian region. This addiction to salt water is not confined to this species only, as I frequently catch other butterflies, chiefly *Papilios*, in the same position. Indeed, such strong and swift-flying things as *Papilio islander* (*Graphium sarpedon islander* Godman & Salvin, 1888) and

P. solon (*Graphium codrus gabriellae* Racheli, 1979) are more easily caught when thus intent upon a draught.”

Charles Woodford.

A Naturalist among the Head-Hunters 1890, pp. 94-95.

– John Tennent, 1 Middlewood Close, Fylingthorpe, Whitby, North Yorkshire YO22 4UD.

An additional record of the Scots Pine Wood Gnat *Mycetobia gemella* Mamaev (Dip.: Mycetobiidae).

Since the addition of *Mycetobia gemella* Mamaev to the British list (Hancock *et al.* 1996, *Dipterists Digest* 3: 32-35) another two examples have been reared from larvae, found in May 1996, under the bark of a dead pine tree in Glen Affric, Inverness-shire. The tree had been blown down about three years previously, judging from the fact that the bark was beginning to loosen while retaining a strong resinous odour in the moist yellowish layer between it and the sap wood. This record constitutes a third British site, the others being Rothiemurchus and Abernethy, both slightly further south and east within Scotland. Abroad it is known from Norway, Denmark and European Russia. On the occasions on which this species has been reared it has always been from gymnosperms in a decayed condition and it is hypothesised that there is a possible obligatory biological link as yet undefined. Other Palaearctic members of the genus have been found under similar conditions but in association with deciduous (dicotyledonous) trees.

The Anisopodidae have been split in recent years by the creation of other families of which Mycetobiidae is the only other one with Palaearctic representatives. The Anisopodidae *sensu lato* are often referred to generically in British literature as window gnats, but by the term wood gnats in North America. Without wishing to enter into arguments about the standardisation of vernacular names, or even the desirability of them in generally unfamiliar insects, the habit of being associated with human habitation is limited to but one or two of the numerous world wide species and hence is not very appropriate for the group as a whole. However, the use of an “English” name for *M. gemella* in this short note title is intended to be purely descriptive.— E. GEOFFREY HANCOCK, Glasgow Museums, Kelvingrove, Glasgow G3 8AG, Scotland.

***Nemapogon clematella* (Fabricius, 1781) (Lep.: Tineidae) larval habits**

In May 1995 I discovered evidence of lepidopterous larvae feeding on the fungus *Diatrype disciformis* growing on dead hazel *Corylus avellanus* wood. Affected hazels were characteristically old coppiced plants where some of the upright boughs had died and been infected with this fungus. *D. disciformis* produces small, hard, roundish, black pustules on the bark’s surface. Phillips (1981, *Mushrooms and other fungi of Great Britain and*

Europe. Pan Books) states that it grows on dead branches of deciduous trees, usually beech *Fagus sylvaticus*.

The larval workings took the form of silken galleries on the surface of the bark coated externally with fine white and black grains of frass. These galleries varied from one to ten centimetres in length and were three or four millimetres wide. They traversed the surface of the bark in an irregular manner, joining several of the characteristic fruiting bodies of the fungus in the process. The fungal material had been consumed by the larvae and further investigation showed that the surface of the bark beneath the galleries had also been eaten. Periodically, the larvae responsible would bore down into the wood and commence tunnelling one or two millimetres below the surface, this accounting for the abrupt termination of the surface galleries. Subsequently the larvae emerged again to feed on the fungal material, constructing further surface galleries in the process.

I collected samples of these larval workings at the time of discovery and over the following fortnight. These were kept in Perspex boxes indoors and on 2 June 1995 a male example of the tineid *Nemapogon clematella* emerged, followed by four more (males and females) up to 11 July that year. The pupal exuviae, which characteristically protrude from the surface of the feeding sites with most tineids, were seen projecting from the ends of some of the silken galleries and from the surface of the bark. Closer examination of these showed that pupation had occurred in slight silken spinings (cocoons?) within the silk galleries or beneath the surface of the bark at the end of tunnels in the wood.

In order to investigate this further I collected larval workings on *D. disciformis*-infected dead hazel in the spring of 1996 and kept these as before. Subsequently about a dozen examples of this moth emerged from early July until mid-August that year. I have succeeded with further rearings from fungal-infected, dead, coppiced hazel bordering a footpath at Medmenham, Buckinghamshire (VC24), from the Icknield Way near Thame, Oxfordshire (VC23), from Cothill Fen near Abingdon, Berkshire (VC22) and from Ashley Hill Forest at Knowl Hill, Berkshire where spinings were found on a field meeting of the British Entomological and Natural History Society on 27 October 1996. In 1995 I showed the larval workings to Mr O'keeffe and he subsequently found examples at several sites in and around Kent and has succeeded in rearing the adults.

Despite extensive rearings of tineids from other species of fungus over the past six years I have not obtained this moth from any other source but dead hazel infected with *D. disciformis*. I have also sampled dead beech infected with this fungus from several sites on the Chilterns, but these lacked surface signs of larval workings and failed to produce moths of this or any other species. Many of the fungal feeding Tineidae belonging to the genus *Nemapogon* are notoriously difficult to record as larvae (Pelham-Clinton 1985, Tineidae. In: *The moths and butterflies of Great Britain and Ireland*,

Volume 2. Harley Books) but the characteristic workings of this species on hazel, which are present all the year round, mean that the breeding range of this moth may now be ascertained with little difficulty.— I. SIMS, 2 The Delph, Lower Earley, Reading, Berkshire RG6 3AN.

***Nemapogon ruricolella* (Stainton 1849) (Lep.: Tineidae) in southern England**

I wish to record the occurrence of the above moth at several localities in southern England. In each case this has been the most abundant tineid I have reared from larvae collected in fungi:

Hainault Forest, Chigwell Row, South Essex (VC18), December 1993 in *Coriolus versicolor*, and December 1994 in *Oxyporus populinus*; Rufous Stone, New Forest, South Hampshire (VC11), March 1995 in *C. versicolor*; Medmenham, Buckinghamshire (VC24), March 1995 in *C. versicolor*, and March 1996 in *Hymenochaete rubiginosa* and *Stereum hirsutum*; Bear Wood, Wokingham, Berkshire (VC22) April 1995 in *C. versicolor*; Bramshill Plantation, Eversley, North Hampshire (VC12), April 1995 in *Bjerkandera adjusta*; Ashley Hill Forest, Knowl Hill, Berkshire, March 1996 in *Herschioporus abietinus*; Burnham Beeches, Slough, Berkshire, March 1996 in *C. versicolor*.

The records from Berkshire appear to be the first since the *Victoria County History* when this moth was recorded from the Reading area. It was not mentioned from Essex by Emmet (1981, *The smaller moths of Essex*. Essex Naturalist 6: 1-158) but by 1985 it had been recorded from VC18 (Pelham-Clinton, 1985, Tineidae. In: *The moths and butterflies of Great Britain and Ireland*, Volume 2). The latter work shows no record for this species from North Hampshire either although this situation may have changed since 1985. It would appear that this moth has increased its distribution and abundance in recent times, as Mr D. O'keeffe informs me that it is very common in his area of West Kent and surrounding vice-counties. It is certainly one worth looking out for in coming seasons.— I. SIMS, 2 The Delph, Lower Earley, Reading, Berkshire RG6 3AN.

The Clouded Yellow *Colias croceus* Geoffroy (Lep.: Pieridae) in Devon during 1996

There was a good invasion of Clouded Yellows in Devon in 1996, with a total of 240 adults recorded. There was an early sighting on 6 May (Exmouth, D.C.M. Radford), but the first invasion did not begin until 6 June at Ebford (D. Hopkins) and with 21 sightings scattered across the County during the rest of the month. Apart from a single observation on 18 July (Beesands, K. Goatly), the second immigration did not start until the end of July (26 July, Chefham, J. Butter), with numbers peaking in August. A few were seen during September and October, with the last one being seen on 13 November (together with a Small Copper – the latest ever Devon record – and a Comma) at Knap Mill by Ken Goatly.—C.R. BRISTOW, Davidsland, Copplestone, Devon EX17 5NX.

BOOK REVIEWS

A guide to moth traps and their use by **Reg Fry and Paul Waring**. 60 pages, 8 monochrome plates, 21 text figures. Folded and stapled (like this journal) with a coloured wrapper. ISBN 0 900054 61 1. Amateur Entomologists' Society, 1996. Obtainable direct from the publisher at £5 (UK) or £5.50 (overseas) at AES Publications, The Hawthorns, Frating Road, Great Bromley, Essex CO7 7JN. Prices include postage and packaging.

This is a low-priced yet high quality publication – just the combination one has come to expect from the equally successful combination of the Amateur Entomologists' Society and Cravitz Printing Company. Within its pages are the answers to a great many questions to which most of us have sought the answers from time to time. A brief history of light-trapping for Lepidoptera leads the work (the first use of light to deliberately attract and trap moths was in the year AD 60!), and is followed by a very simple guide to the measurement and properties of light. This is well written and makes things crystal clear, providing a useful background for the rest of the book. A short section on "The light trap response" summarises some of the theories on why moths are attracted to light, though it neither sets out to find nor does it achieve the solution to this phenomenon. Useful chapters follow on the different kinds of bulb and their varying degrees of attractiveness to moths, the different types of trap and their construction and trap operation. This latter section includes a very useful summary on the relative performance of the different kinds of light traps.

This is not a major scientific treatise, but a very readable summary of knowledge on the subject, by two very well-known and highly experienced light-trappers, intended to replace *AES Leaflet 33* on the same subject. It covers just about everything that the amateur Lepidopterist is likely to want to know about light trapping and I would venture to suggest that it is absolutely essential reading for anyone who is serious about catching moths both here in Britain and elsewhere in the world.

Colin W. Plant

The Hymenoptera edited by **Ian Gauld and Barry Bolton**. 332 pages, 148 text figures, 8 coloured and 2 half-tone plates. hardbound. ISBN 0 19 858521 7. Oxford University Press, 1996. £37.50.

With more than six and a half thousand species, the Hymenoptera is by far the largest Order of insects in Britain and yet is one of the least studied. The Editors' Preface suggests that one reason for this may be that there has been no satisfactory and comprehensive introductory work to the group. This may or may not be the case (one may prefer to think that it is rather more to do with the lack of adequate identification keys) but either way there has indeed

been a lack of such a work in the British literature until the publication of this present volume.

The introductory chapter encompasses the diversity and natural history of the Hymenoptera as a whole and also examines the British fauna as a sample of that of the world. A chapter on biology makes fascinating reading; I found it particularly pleasing at last to be able to comprehend the differences between parasites, parasitoids, cleptoparasites and so on. A great many such technical words are clearly defined and explained and this is extremely helpful. However, these words tend to get lost in a sea of text and it would perhaps have improved the reference value of the book had these terms also been pulled together in a Glossary. Chapters follow on Economic importance of Hymenoptera, Collecting and studying, Structure, Classification and Evolution. The chapter on structure is particularly valuable in its provision of labelled drawings indicating the various body parts, wings cells, etc and their technical names – especially those peculiar to the Hymenoptera. Most of these names can be encountered in a variety of published identification keys without any explanation, so that the non-specialist is unable to proceed in a satisfactory manner; this book solves much of that problem.

A brand new key to enable identification of British adult Hymenoptera to Superfamily follows. This is a marked improvement on earlier versions scattered across the literature; I have tested it and it works very well. The remainder of the book, which is the greater part, deals with all the British Hymenoptera groups, including easy to use keys to all families. A brief synopsis of each family is given and is accompanied by an excellent line-drawing of a representative species.

This is a definitive guide to this interesting and neglected group of British insects and an encyclopædic reference work on the subject. The identification keys given are also of great relevance to the study of the group in Western Europe and much of the work is also of relevance in Canada and the USA. It will appeal mainly to those readers who are already in some degree interested in the group but is equally likely to prove an invaluable reference work for non-specialists and should certainly find a place on the shelves of university and other technical libraries.

Colin W. Plant

The thermal warriors: strategies of insect survival by Bernd Heinrich. 222 pages, 8 coloured plates, numerous text figures. Hardbound. ISBN 0 674 88340 3. Harvard University Press, 1996. £17.95.

Modern day crawling arthropods are all “cold-blooded” – that is their bodies approximately assume the temperature of their surroundings. Not so all flying insects, we discover; there is a wide range of species capable of positive thermoregulation. Some species of hawk moth, for example, normally maintain a thoracic temperature at more or less 46°C over a wide

range of ambient air temperatures, so that their flight muscles are kept in a state of constant readiness.

The mechanisms of thermoregulation are almost as many and varied as insects themselves. Most readers will be familiar with moths “shivering” to warm up sufficiently for flight. This, we are told, increases the thoracic temperature to a level at which the flight muscles can operate at optimum level. But other insects employ different techniques to control their body temperatures. Desert dwelling carpenter bees *Xylocopa* species, for example, are large and usually hairless bees which lose heat through their heads and gain it by simply flying faster! Robber flies (Asilidae), bask in direct sunshine to enable rapid dashes to catch passing bees and other insects. Sawfly larvae (Symphyta), raise their rear ends off the substrate to increase heat loss through convection. These and a great many other fascinating facts are divulged to us in the pages of this interesting book.

Thermoregulation has distinct advantages for insects which are able to perform it. Advantages for flight, for growth, for egg incubation in colonial nesting species and even in defence against predators – the coloured plates show a group of about 400 *Apis cerana* bees forming a tight ball around a predatory wasp *Vespa mandarina* to kill it by overheating before gradually releasing it again!

Though this book contains a great deal of interesting information, its style is informal and it is by no means a work of reference. To glean all of the valuable tidbits contained in its pages requires reading it from cover to cover. To my mind, this is excellent bedtime reading for entomologists of all leanings.

Colin W. Plant

The Lepidoptera of Europe: a distributional checklist edited by Ole Karsholt & Józef Razowski. 380 pages, hardbound. ISBN 87-88757-01-3. Also provided on compact disk within the purchase price. Apollo Books, 1996. 490 DKK (approximately £55) exclusive of postage. Available by post from Apollo Books, Kirkeby Sand 19, DK-5771 Stenstrup, Denmark.

This review is in two parts. The printed book is reviewed in the usual manner and then, in a break with tradition, a separate reviewer discusses the compact disk version.

1. The printed version

The purpose of a scientific name is, in theory, to introduce a degree of uniformity to enable international understanding. There are many differences in names used for the same moth by entomologists in different countries. Such differences are also noted between entomologists of different generations in Britain – those brought up on “South” often using different names to younger generations who were raised on “Skinner” and/or “Bradley & Fletcher”. For this reason, we should all welcome the production

of a European checklist of Lepidoptera. As Europe gets metaphorically closer, as more and more continental moths find their way to Britain, and as more and more British entomologists “discover” Europe as a collecting ground, the need for the standardisation of names gets ever greater. The last European checklist was published as long ago as 1901! We would therefore expect a number of changes and should accept them as inevitable, no matter how alien they may seem at first glance, and we would expect to be able to relate these changes to our existing British checklists. The new European checklist succeeds admirably in the first of these expectations but, in this reviewer’s opinion, falls down slightly on the second.

Many of the changes in this new checklist may come as a considerable shock. Many familiar names have been reduced to synonymy; several species have been moved to other genera; more species have been moved to different families or subfamilies. Some subfamilies have been raised to family status and the entire sequence of families has been completely altered. To deal first with the sequence of families, the Hepialidae remain in their position at the front of the checklist, but the Zygaenidae, Sesiidae and Cossidae are moved to a position after most of the micros in front of the Tortricidae. Three families of micros - the Choreutidae, Schreckensteiniidae and Epermeniidae, are now to be found sandwiched between the Tortricidae and the Alucitidae, whilst the Lymantriidae, Nolidae (which now includes several former noctuids) and Arctiidae are placed in this order after the end of the Noctuidae. Families Lasiocampidae, Endromidae, Saturniidae and Sphingidae now precede the butterflies which are followed by the Drepanidae (of which the Thyatiridae is now a mere subfamily – the Thyatirinae) then the Geometridae. All this, we are assured, is in accordance with the most recent research, though I think we have all heard that one before! I have no doubt that these will not be the last changes to be made, in spite of the publisher’s well-intentioned hopes that “the list will lead to uniformity in the systematics and nomenclature used in European lepidopterology”.

At the more detailed level of changes in genera and species, and the positions of these in the list, it is clearly impractical to review every item, so I shall look only at one family, the Noctuidae. This family has been completely revamped, an action long overdue. Picking on the subfamilies at the end of our existing British checklist, the Hypeninae are now split into the Herminiinae (*Paracolax* Hb., *Macrochilo* Hb., *Herminia* Latr., *Pechipogo* Hb. and *Zanclognatha* Lederer), the Strepsimaninae (*Hypenodes* Doubl. and *Schranksia* Hb.) and – separated from these by the Catocalinae and the Calpinae - the Hypeninae (*Hypena* Schrank together with *Phytometra* Haw., *Rivula* Guen. and *Parascotia* Hb. – moved here from the Ophiderinae, remaining members of which, except for *Scoliopteryx* Germar – moved to the Calpinae – are now returned to the Catocalinae). The genus *Tristateles*

Tams has moved to the Eustrotiinae, occupying a position somewhat later in the list. Similar changes are to be found throughout the rest of the Noctuidae. This is all very well, and doubtless taxonomically better than before, but a by-product of this much needed sorting of the chaos that has dominated European Lepidoptera taxonomy is still a degree of confusion. It took me quite a while to discover, for example, where *Tristateles emortualis* (D.& S.) had disappeared to (though perhaps I should have used the index) and I was on the point of wondering whether it had perhaps got missed out altogether when I eventually found it. Similarly, looking for *Lithophane ornitopus* (Hufn.) occupied a great deal of my time until I discovered that it had been removed from the Cuculliinae and placed in the Hadeninae. *Colocasia coryli* (L.) is elevated to the Pantheidae, positioned after the Noctuidae, and the genera *Nycteola* Hb., *Bena* Billberg, *Pseudoips* Hb. and *Earias* Hb. are no longer regarded as belonging here and are moved to the Nolidae, which now features at the end of the checklist between the Lymantriidae and the Arctiidae.

Further confusion is likely to result from changes of both genera and specific epithets. By way of example, *Hoplodrina alsines* (Brahm) has not only been placed in the Hadeninae, along with other genera including *Apamea*, *Xylena*, *Lithophane*, *Aporophyla* and *Xylocampa*, but has also changed its name to *H. octogenaria* (Goeze). Occasional species (of which this is one) have a black spot placed against the left margin. This indicates that a note is given in the rear of the book. Looking at this we can find important synonyms. However, this is extremely inconvenient in daily usage and is also unidirectional – I can discover that species X was once called species Y but I can't open the book and find what species Y is now called. The index contains those synonyms mentioned in the notes but British readers will be hard pressed to find all of the ones they will need. Of course, the checklist already occupies 380 quite large pages and to introduce synonymies would doubtless have made it too large and too expensive. On the other hand, this is far from being a book for the amateur. It will be greatly popular with taxonomists, regardless of whether they agree or disagree with its contents, but it is unlikely to find a space on the bookshelf of every British Lepidopterist – particularly since only 800 copies are being printed. On this basis, and given that most purchasers are thus likely to be in a position to get someone else to pay for it, one wonders whether or not it may have been wise to produce a synonymic list in two volumes rather than what is effectively a "label list" in one.

On a more positive note, the checklist does provide a very valuable summary of known European distribution data, the countries in which a species is recorded being indicated by letter codes, although this takes no account of status and includes extinct species (for example, *Emmelia trabealis* (Scop.) and others are shown as occurring in Britain in spite of being extinct here).

Overall, this new checklist is to be much welcomed. In my opinion, the real problem lies in that it has been so long since a “whole Europe” list has been produced that the changes now introduced are enormous, if not overwhelming. Different countries, including Britain, have followed different tracks and produced their own, quite different, lists and it is therefore inevitable that any attempt to revise the full European list will introduce an inordinately large number of changes, many of which may not be immediately popular. I suspect that it will take a while before its contents find universal acceptance, and there will inevitably need to be some fine-tuning in places (the *Pyrilidae* in particular), but in due course the majority are likely to do so.

The ground is now laid. There is now a clear opportunity for a revised British checklist, taking into account the various changes made; until that takes place it is likely that far less confusion will result from sticking to the names we know and love. As far as this journal is concerned, it would be unwise to switch nomenclature in mid-volume and the earliest one might expect any changes here would be January 1988!

Colin W. Plant

2. The compact disk (CD) version

Reviewing a book presented in a CD format requires a totally different technique – gone are the pleasures of flicking through the pages, gazing at sumptuous illustrations, and getting an overall “feel” for a book before systematically sampling the text. But we must all put behind us the Luddite tendency, and embrace this new technology.

The disk was sampled through both Windows 3.1 and Windows 95 – both working perfectly well. There is a very brief “Readme” notepad supporting the disk, which is essentially a compilation of the datafiles as they appear in the book. This did not include the explanatory material found in the book, so a user separated from the printed text would be rather lost. There are no resident programmes for manipulating or editing the data – this must be done by the user (if competent to do so!). Three formats are used – Paradox (although working only with version 4, 4.5 or Paradox for Windows), Dbase III and a Text file in a comma-delineated form. Each version comes with its own set of notes.

The files are very large, ranging from 1748Kb for the text only to 2757Kb for the Dbase version. This exceeds the capacity of Windows clipboards, so care must be taken when transferring data around your system. The reviewer looked only at the Dbase and text versions. Both worked well, but the Dbase version did not include a form for viewing the notes alongside the species. It was possible to manipulate the files to allow this, but required a fair degree of familiarity with Dbase working to achieve this.

The Text files, with all the distribution data, were very messy when imported into a Word file. To make them manageable, some editing is

necessary, but the files were too large for Word 6.0 to handle (for example, using a search and replace command). The notes to the species were in a separate file, and from the Text version it was not possible to determine if a species or family had a note associated with it. Printing out the files is possible, but at 474 pages, it would be easier to buy the book!

For the general user of a reference book, the CD will have little appeal. Where it does score is in being a list of species, with some associated data, that can be downloaded in part or whole and manipulated at will. Creating a database of species of Lepidoptera is a huge and complicated task - Apollo have done it for us in this disk, and as such it will be welcomed. What might not be welcomed is the large number of taxonomic changes in the list - but that is for another reviewer!

Paul Sokoloff

Name that insect. A guide to the insects of south-eastern Australia by **T.R. New**. 208 pages, paperback. Several line drawings. ISBN 0 19 553782 3. Oxford Scientific Publications, 1997. £12.99.

With over 100,000 species or forms of insect estimated to be present in Australia, and only about half of them formally described, it is inevitable that a book of this nature should direct its efforts to the understanding of the fauna of just one of the better studied regions of the country. This book presents a compact and highly usable visual guide to the insect groups and provides simple dichotomous keys for the identification of all the individual orders present in Australia. It makes no pretence at being a formal identification guide and makes frequent reference to the need to use proper identification keys. An excellent introductory chapter covers diversity, structure and classification of insects and is followed by one concerned with insect diversity in the region covered by the book. Recognition of each of the orders of insects occurring in Australia is covered next. Here, silhouettes of whole insects serve as an aid to recognition, whilst the text introduces the reader to the use of dichotomous keys and then proceeds to key out orders of insects and classes of allied animals - both adults and larvae. The remainder of the book is taken up with introductions to each major group. A section on collection and preservation follows, in which the critical importance of correct preparation of each group of insects to enable proper identification is emphasised, then a useful glossary and the index.

The book serves its purpose of introducing south-eastern Australia's insects to the reader very well. Some of the taxonomy may appear strange to British readers but the content of the work is accurate, as indeed one might expect from this particular author, and should any British entomologists find themselves travelling "down under" in the future, this would make very useful reading during the flight.

Colin W. Plant

The butterflies and moths of Bedfordshire by V.W. Arnold, C.R.B. Baker, D.V. Manning and I.P. Woiwod. 416 pages plus 16 pages of colour plates, 30 black & white photographs, 80 line drawings and over 1300 distribution maps. Hardbound, ISBN 0 950 6521 5 6. Published by the Bedfordshire Natural History Society, 9 Ullswater Road, Dunstable, Bedfordshire, LU5 6JP. £14.90 plus £3.70 postage & packaging (UK).

The proven track-record of the authors, and the fact that the Foreword was written by Maitland Emmet, suggest immediately that this book is likely to combine a high degree of quality with the highest degree of accuracy. The reader will not be disappointed in either respect; this is one of the better-by-far county faunas to be produced.

In a single, manageable volume, the team of authors provide up-to-date information on all the Lepidoptera within the county of Bedfordshire with almost all species of moth, including the micros, represented by a ten-kilometre square distribution map, and the better recorded butterflies mapped to tetrad level (2 Km x 2 Km squares). The species accounts are concise and to the point, summarising past and present status, adult flight periods and larval foodplants. The latter are cribbed from other (national) sources but this is acknowledged in the introduction and when a foodplant has been recorded in Bedfordshire it is flagged with a star.

The introductory chapters of this book are particularly worth reading – even if only to look at the wonderful “then and now” black and white photographs of various sites in the county which the authors have revisited to repeat shots originally taken in the dim and distant past. Discussion on the major habitat types present in Bedfordshire is illustrated by accounts of selected sites and, as might perhaps be expected, Ian Woiwod presents an account of monitoring population change and diversity in butterflies and moths. The section on Bedfordshire lepidopterists is most interesting and includes current, as well as past, persons. Bringing up the rear of the book are tables of indices of butterfly abundance derived from the various butterfly monitoring transects, followed by indices to scientific names, English names, larval foodplants and places in the county.

It is very difficult to fault this book, a few minor errors not the fault of the authors having already been detected and covered by the insertion of six sticky correction labels in the appropriate places. To most people, Bedfordshire is merely somewhere that one drives through on the M1 motorway; this excellent book will do much to alter that image and it is strongly recommended to all.

Colin W. Plant





XIth European Congress of Lepidopterology

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22 - 26 March 1998

FIRST ANNOUNCEMENT

The XIth European Congress of Lepidopterology will be organised by the *Societas Europaea Lepidopterologica* (SEL) in the "Provinciaal Vormingscentrum Malle", at about 25km NE Antwerpen, Belgium, from Sunday 22 to Thursday 26 March 1998.

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

(Founded by J.W. TUTT on 15th April 1890)

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MICROLEPIDOPTERA REVIEW OF 1995

DAVID J.L. AGASSIZ¹, ROBERT J. HECKFORD² AND JOHN R. LANGMAID³.¹ 23 St. James's Road, Gravesend, Kent DA11 0HF.² 67 Newnham Road, Plympton, Devon PL7 4AW.³ 1 Dorrita Close, Southsea, Hants PO4 0NY.

READERS MAY FEEL that the list of publications in this review is more impressive than the list of records. Perhaps a succession of dry summers is not helpful to microlepidoptera or their study, or else in this computerised age perhaps it is easier and more appealing to produce publications and manage data than to undertake painstaking fieldwork.

In 1995 there was only one species added to the British list, *Eccopisa effractella* Zeller, and that is perhaps more likely to be a casual introduction than a genuine addition to our fauna. Palm (1986) cites records from the Baltic States, Poland and Belgium in northern Europe although the species is better known much further south. Beyond that the authors, selecting records for mention independently, only agreed on three that were worthy of mention: the third British record of *Sclerocona acutellus* (Eversmann) adds to the mystery surrounding this species which has appeared not only more widespread and commonly in Europe but also in North America (D. Wagner, pers. comm.). *Agonopterix curvipunctosa* (Haw.) recorded from Somerset is encouraging since it had not been seen in England for 30 years. *Tachystola acroxantha* (Meyr.), formerly assigned to the genus *Parocystola*, had been confined to the south-west, where it was slowly extending its range; its establishment in the Manchester area is remarkable, and must surely be due to transportation by mankind – but who moves large quantities of decaying leaves, sufficient for the founding of a local population?

Rare species continue to be found. *Eudarcia richardsoni* (Wals.) rediscovered in its former Dorset localities is exciting, but we echo the words of the discoverers: surely it can be found somewhere else in the world? Records of *Monochroa monachella* (Hübner) and *M. fenestratella* (Heyd.) are of interest, and *Phyllonorycter sagitella* (Bjerk.) is normally at such a low density as seldom to be detected.

New life history information is always welcome. The discovery by Ian Sims of the larval stage of *Nemapogon clematella* (Fabr.) should surely lead to better knowledge of the distribution of this attractive moth. Post-hibernation information about *Agonopterix kuznetzovi* Lvov. adds to the knowledge of this species group about which so much has been learned in recent years.

Recently established species continue to be recorded and spread: *Evergestis limbata* (Linn.) continues to be recorded and in new localities must surely be resident, and *Cochylis molliculana* Zeller appears to be consolidating its foothold on the south coast. *Blastobasis decolorella* (Woll.)

has now nearly completed its spread through Great Britain. Those species newly recorded from Scotland or Wales are emphasised in the systematic list and so there is no need for further mention of them here.

Among the literature published since our last Review, the long awaited volume 3 of *The Moths and Butterflies of Great Britain and Ireland* will surely stimulate further interest, especially in the Coleophoridae whose larval descriptions and illustrations of the cases are outstanding. Plume moths come in for special attention with the publication of two books: the first volume of *Microlepidoptera of Europe* and volume 9 of *Microlepidoptera Palaearctica*; however discrepancies remain and any hope that the difficult groups would be sorted out are soon dashed. Arenberger in *MP* avoids treating the Platyptiliinae with the problems of *Stenoptilia*, and whilst there is some agreement about generic placements, the name-endings in Arenberger follow the current ICZN Code, whereas those in *Gielis* anticipate changes proposed for a new Code. What is more alarming is that the number of species in Europe, belonging to the groups treated by both, according to *Gielis* is 13 fewer than according to Arenberger!

The Lepidoptera of Europe: a distributional checklist by Karsholt & Razowski was another publication of significance which has appeared. If we continue to focus on plumes, in the genus *Stenoptilia* there are included 61 species whereas *Gielis* treats only 43 species. This merely demonstrates how much thorough research still needs to be done on this group, hopefully before there are any more publications. This gives us some problems in knowing what to include in the systematic list in this Review, and, for the present, species whose status is contentious are omitted, in order to avoid causing further confusion. Apart from this the list, although considered better in some parts than others, will help to stabilise names in cases where usage has been different between Britain and the Continent.

Local lists contain much information, especially concerning distribution of species in Britain. *The Butterflies and Moths of Lincolnshire - micromoths and species review to 1996* by Rex Johnson, and *The Butterflies and Moths of Bedfordshire* by Arnold, Baker, Manning and Woiwod are important new county lists which include micros. Additional records for Ireland compiled by Ken Bond were published in *Irish Naturalists Journal* **25** (6): 193-236 and a further list by A.M. Emmet & J.R. Langmaid is published in the *Entomologist's Gazette* **48** *in press*. A number of records from south Wales were published in this *Journal* **109**: 31-39 by David Slade. As usual many records are included in the report of the Annual Exhibition of the British Entomological & Natural History Society published in *Br.J.ent.Nat.Hist.* **9**: 218-225.

Records of Migrants in 1991 and 1992 have now been published in this journal and contain important micro records.

The full systematic list includes records submitted by recorders and those which have been published in entomological journals. Many thanks to those

whose records are included, as always these are identified by their initials: D.J.L. Agassiz, M.V. Albertini, H.E. Beaumont, K.P. Bland, K.G.M. Bond, M.F.V. Corley, K.V. Cooper, A.M. Davis, B. Dickerson, A.M. Emmet, A.P. Foster, B. Goater, M.W. Harper, R.J. Heckford, S.H. Hind, J.R. Langmaid, R. Leverton, D.V. Manning, D. O'Keeffe, S.M. Palmer, M.S. Parsons, J. Robbins (Somerset), A.N.B. Simpson, B.F. Skinner, D.J. Slade, R.A. Softly, P.H. Sterling, M.J. Sterling & M.R. Young. PPRS denotes Pyralid & Plume Recording Scheme, information supplied by Tony Davis.

Journal titles are abbreviated for economy of space: *Ent.Gaz.* for the *Entomologist's Gazette*, *Ent. Rec.* for the *Entomologist's Record and Journal of Variation*, and *BJENH* for the *British Journal of Entomology and Natural History*.

Again an attempt has been made to identify new vice-county records, these are **bold** and underlined. The maps held by A.M. Emmet have been used for this purpose and we are grateful to Maitland Emmet for providing this information.

The sequence of records follows the numbers of Bradley & Fletcher's checklists, but where new names or combinations have been published these are followed. In one case in the Pyralidae it was necessary to change the order so as to keep together two species in the same genus. Family names are not taken from a consistent source, but it is hoped by next year a more up-to-date list may be available.

Copies of the full list of records submitted are available from David Agassiz.

SYSTEMATIC LIST

MICROPTERIGIDAE

- 3 *Micropterix aureatella* (Scop.) – Selkirk (**79**) one 12.vi.95 – AME & JRL

ERIOCRANIIDAE

- 6 *Dyseriocrania subpurpurella* (Haw.) – Selkirk (**79**) many tenanted mines on *Quercus* 12.vi.95 – AME & JRL; near Craigellechie (**94**) mines xi.95 – MRY
- 8 *Eriocrania unimaculella* (Zett.) – Gait Barrows NNR (**60**) tenanted mines on *Betula* – AME
- 11 *E. haworthi* Bradl. – Warton Crag NR (**60**) tenanted mines on *Betula* 23.v.95 – AME
- 13 *E. semipurpurella* (Steph.) – Warton Crag NR (**60**) tenanted & vacated mines on *Betula* 23.v.95 – AME

NEPTICULIDAE

- 23 *Ectoedemia argyropeza* (Zell.) – Chambers Farm Wood (**54**) tenanted mines on *Populus tremula* 4-5.xi.95 – AME
- 24 *E. turbidella* (Zell.) – Castle Ashby (**32**) mines 15.xi.95, moths bred – DVM

- 25 *E. intimella* (Zell.) – Chambers Farm Wood (**54**) tenanted mine on *Salix cinerea* 4-5.xi.95 – AME
- 28 *E. angulifasciella* (Staint.) – Chambers Farm Wood (**54**) tenanted mines very common on *Rosa* spp 4-5.xi.95 – AME
- 30 *E. arcuatella* (H.-S.) – Wolfscastle (**45**) a few vacated mines on *Fragaria vesca* 13.ix.95 – AME & JRL
- 35 *E. minimella* (Zett.) – Whixall Moss (**40**) one vacated mine on *Betula pubescens* 23.ix.95 – AME & JRL
- 37 *E. albifasciella* (Hein.) – Nisbet (**80**) one 14.vi.95 – AME & JRL; near Craigellechie (**94**) mines xi.95 – MRY
- 38 *E. subbimaculella* (Haw.) – Houghton (**60**) vacated mine on *Quercus* 8.xi.95 – SMP
- 39 *E. heringi* (Toll) – Wolfscastle (**45**) a few tenanted mines on *Quercus* 13.ix.95 – AME & JRL
- 41 *E. atrifrontella* (Staint.) – Bagley Wood (22) 2.viii.95 – MFVC, BJENH 9: 219
- 41a *E. amani* Svensson – Waresley Wood (31) 10.vii.95 – BD, *Ent. Rec.* **108**: 95
- 46 *Trifurcula immundella* (Zell.) – Mount Desert (**H4**) vacated mines in *Cytisus scoparius*, 1.v.95 – KGMB
- 53 *Stigmella splendidissimella* (H.-S.) – Wolfscastle (**45**) a few vacated mines on *Rubus fruticosus* 13.ix.95 – AME & JRL; Buckingham Thick Copse (**32**) 17.xi.95 – DVM
- 55 *S. aeneofasciella* (H.- S.) – Chambers Farm Wood (**54**) two tenanted mines on *Agrimonia* 5.xi.95 – AME
- 58 *S. ulmariae* (Wocke) – Chambers Farm Wood (**54**) vacated mines on *Filipendula ulmaria* 5.xi.95 – AME
- 64 *S. continuella* (Staint.) – Whixall Moss (**40**) many vacated mines on *Betula pubescens* 23.ix.95; Wolfscastle (**45**) one vacated mine on *Betula* 13.ix.95 – AME & JRL
- 65 *S. speciosa* (Frey) – Whitland (**44**) one vacated mine on *Acer pseudoplatanus* 12.ix.95 – AME & JRL
- 66 *S. sorbi* (Staint.) – Rincrew Wood (**H6**) mines on *Sorbus aucuparia* 3.vi.1995; Kilcumber Bridge (**H18**) mines with dead larvae on *Sorbus aucuparia* 4.x.95 – KGMB
- 67 *S. plagicolella* (Staint.) – near Dufftown (**94**) mines xi.95 – MRY; Ballybeg quarry (**H5**) mine on *Prunus domestica* 16.viii.95 – KGMB
- 74 *S. assimilella* (Zell.) – Chambers Farm Wood (**54**) vacated mines on *Populus tremula* 4-5.xi.95 – AME ; Martinshaw Wood (**55**) mine on *Populus tremula* 22.x.95 – J.R. McPhail per AME
- 75 *S. floslactella* (Haw.) – Chambers Farm Wood (**54**) vacated mines on *Corylus* 4-5.xi.95 – AME
- 78 *S. incognitella* (H.-S.) – Chambers Farm Wood (**54**) tenanted and vacated mines on *Malus* 5.xi.95 – AME
- 80 *S. ulmivora* (Haw.) – Chambers Farm Wood (**54**) tenanted and vacated mines on *Ulmus* 4.xi.95 – AME

- 83 *S. atricapitella* (Haw.) – Anglezarke (59) vacated mine on *Quercus* 26.x.95; Red Scar Wood (60) vacated mine on *Quercus* 24.x.95 – SMP
- 84 *S. ruficapitella* (Haw.) – Wolfscastle (45) a few vacated mines on *Quercus* 13.ix.95 – AME & JRL; Brock Bottom (60) tenanted mine on *Quercus* 22.vii.95 – SMP; Chambers Farm Wood (54) tenanted mines on *Quercus* 4-5.xi.95 – AME
- 86 *S. roborella* (Johan.) – Chambers Farm Wood (54) tenanted mines on *Quercus* 4-5.xi.95 – AME; Martinshaw Wood (55) mine on *Quercus* 22.x.95 – J.R. McPhail per AME
- 90 *S. tiliae* (Frey) – Chambers Farm Wood (54) vacated mines on *Tilia* 4-5.xi.95 – AME
- 103 *S. nylandriella* (Tengst.) – Rincrew Wood (H6) mines on *Sorbus aucuparia* 3.viii.95; Kilcumber Bridge (H18) vacated mines 4.x.95 – KGMB
- 104 *S. magdalenae* (Klim.) – Whixall Moss (40) one vacated mine on *Sorbus aucuparia* 23.ix.95 – AME & JRL; Rincrew Wood (H6) mines on *Sorbus aucuparia* 3.viii.95 – KGMB
- 108 *S. crataegella* (Klim.) – Wolfscastle (45) one vacated mine on *Crataegus laevigata* 13.ix.95 – AME & JRL
- 111 *S. microtheriella* (Staint.) – near Dufftown (94) mines xi.95 – MRY
- 112 *S. luteella* (Staint.) – Wolfscastle (45) several vacated mines on *Betula* 13.ix.95 – AME & JRL
- 113 *S. sakhalinella* Puplesis – Winmarleigh Moss (60) vacated mine on *Betula pendula* 20.x.95 – SMP; Hazelborough Wood (32) 11.x.95 – DVM
- 115 *S. alnetella* (Staint.) – Cross Hands (44) one vacated mine on *Alnus glutinosa* 12.ix.95; Wolfscastle (45) two vacated mines 13.ix.95 – AME & JRL; Farthinghoe Reserve (32) 2.xi.95 – DVM; near Dufftown (94) mines xi.95 – MRY; Messingham NR (54) vacated mines on *Alnus* xi.95 – R. Johnson per AME
- 116 *S. lapponica* (Wocke) – Wolfscastle (45) a few vacated mines on *Betula* 13.ix.95 – AME & JRL
- 117 *S. confusella* (Wood) – Wolfscastle (45) one vacated mine on *Betula* 13.ix.95 – AME & JRL

TISCHERIIDAE

- 123 *Tischeria ekebladella* (Bjerk.) – near Craigellechie (94) mines xi.95 – MRY
- 127 *Emmetia angusticolella* (Dup.) – Chambers Farm Wood (54) tenanted mines common on *Rosa* 4-5.xi.95 – AME

INCURVARIIDAE

- 129 *Incurvaria pectinea* Haw – Selkirk (79) several tenanted mines on *Betula* 12.vi.95 – AME & JRL

PRODOXIDAE

- 135 *Lampronia luzella* (Hübner) – Launde Big Wood (55) 4.vi.95 – A.P. Russel per AME

- 136 *L. corticella* (Linn.) = *rubiella* (Bjerk.) – Selkirk (**79**) many 12.vi.95 – AME & JRL
138 *L. fuscata* (Tengst.) – Higher Hyde NR (9) at m.v. light 15.vi.95 – PHS

ADELIDAE

- 142 *Nematopogon pilella* ([D.&S.]) – Longridge Fell (60) three 7.vii.95 – SMP
145 *Nemophora minimella* ([D.&S.]) – Redditch (**37**) twenty swept 21.vii.95 – ANBS

HELIOZELIDAE

- 156 *Heliozela resplendella* (Staint.) – Wolfscastle (**45**) several vacated mines on *Alnus glutinosa* 13.ix.95 – AME & JRL
157 *H. hammoniella* (Sorh.) – Chambers Farm Wood (**54**) vacated mines on *Betula*, 5.xi.95 – AME

PSYCHIDAE

- 175 *Narycia monilifera* (Geoffr.) – Nisbet (**80**) one case on tree trunk 14.vi.95 – AME & JRL

TINEIDAE

- 196 *Morophaga choragella* ([D.&S.]) – Berks (22) records – K.N.A. Alexander, *BJENH* 9: 165–6
202 *Eudarcia richardsoni* (Wals.) – Punwell Cove (9) larval cases 28.ii.95–MSP & PHS *et al.*; Dorset (9) sites, history and ecology – MSP & PHS, *Ent. Gaz.* 46: 227–230
219 *Nemapogon ruricolella* (Staint.) – Hatfield Forest (19) a few bred from bracket fungus on fallen tree 5.iv.95 – AME & JRL
220 *N. clematella* (Fabr.) – Medmenham, Marlow (24) larval workings in the fungus *Diatrype disciformis*, moths bred – I.M. Simms, *antea*: 157
227 *Monopis laevigella* ([D.&S.]) – Cornhill (**94**) vii.95 – MRY & RL
232 *M. monachella* (Hübner) – Sandwich (**15**) 12.viii.95 – DJLA
233 *M. fenestratella* (Heyd.) – Richmond Park (**17**) one at m.v. light 20.vi.95 – MSP, *Ent. Gaz.* 47: 19–20

OCHSENHEIMERIIDAE

- 251 *Ochsenheimeria mediopectinellus* (Haw.) – Hoar Oak Water (4) 29.vii.95 – JR
252 *O. urella* F. v. R. – Hoar Oak Water (4) 29.vii.95; Weir Water, Exmoor (**5**) 19.vii.95 – JR
253 *O. vacculella* F. v. R. – Great Coxwell (22) 22.viii.95 – APF, *BJENH* 9: 220

BUCCULATRICIDAE

- 272 *Bucculatrix cidarella* Zell. – Wolfscastle (**45**) a few mines and moulting cocoons on *Alnus glutinosa* 13.ix.95 – AME & JRL

- 273 *B. thoracella* (Thunb.) – Hampstead (21) 6–8.v. and 19.vii. – 1.viii.95 indicating two generations – RAS; Chambers Farm Wood (**54**) vacated mines, moulting cocoons and larval feeding on *Tilia* 4–5.xi.95 – AME
- 274 *B. ulmella* Zell. – Lord's Lot Wood, near Borwick (**60**) vacated mines, moulting cocoons and larval feeding on *Quercus* 19.x.95 – AME

GRACILLARIIDAE

- 281 *Caloptilia populetorum* (Zell.) – Farnborough (**12**) one at light 31.iii.95 – R.W. Parfitt, genitalia det. JRL; near Dolgellau (48) viii.95 – MRY
- 282 *C. elongella* (Linn.) – Messingham NR (**54**) larval feeding on *Alnus* xi.95 – R. Johnson per AME; Ross Island (**H2**) larva on *Alnus glutinosa* 17.v.95 – KGMB
- 283 *C. betulicola* (Hering) – Wolfscastle (**45**) a few mines and spinnings on *Betula* 12.vi.95; Selkirk (**79**) several tenanted mines and one spinning on *Betula* 12.vi.95 – AME & JRL
- 284 *C. rufipennella* (Hübner) – Uffington (**40**) a few vacated mines and spinnings on *Acer pseudoplatanus* 23.ix.95 – AME & JRL; Farnborough (12) one 16.iv.95 – R.W. Parfitt per JRL
- 285 *C. azaleella* (Brants) – Burnham (**24**) 6.v.95 – MVA
- 286 *C. alchimiella* (Scop.) – Waterhall Plantation (**41**) at m.v. light 26.vii.95 – DJS
- 287 *C. robustella* Jäckh – Chambers Farm Wood (**54**) old larval feeding on *Quercus* 4–5.xi.95 – AME
- 292 *C. leucapennella* (Steph.) – Glen Artney (88) 16.ix.95 – KPB
- 296 *Calybites phasianipennella* (Hübner) – West Melton (63) 28.vi.95 – HEB
- 297 *C. auroguttella* (Steph.) – Kenfig NNR (**41**) 29.vii.95 – DJS
- 301 *Parornix betulae* (Staint.) – Wolfscastle (**45**) one mine and spinning on *Betula* 13.ix.95 – AME & JRL
- 305 *P. scoticella* (Staint.) – Anglezarke (**59**) mines & folds on *Sorbus aucuparia* 26.x.95 – SMP
- 316 *Phyllonorycter roboris* (Zell.) – Wolfscastle (**45**) one mine on *Quercus* 13.ix.95 – AME & JRL
- 319 *P. saportella* (Dup.) – East Wretham (28) one beaten from *Quercus* 9.vi.95 – AME & JRL; Kenfig NNR (**41**) 10.vii.95 – DJS, *Ent. Rec.* **109**: 31
- 321 *P. messaniella* (Zell.) – Lightfoot Green (**60**) 4.x.95 at m.v. light – SMP
- 327 *P. cydoniella* ([D.&S.]) – Chambers Farm Wood (**54**) tenanted mines on *Malus* 5.xi.95, moths bred – AME
- 330 *P. cerasicolella* (H.-S.) – Chambers Farm Wood (**54**) tenanted mines on *Prunus avium* 4.xi.95 – AME
- 332a *P. leucographella* (Zell.) – Leicester, Loughborough & East Goscote (**55**) mines on *Pyracantha* – A.P. Russell per AME
- 337 *P. hilarella* (Zett.) – near Craigellechie (**94**) mines xi.95 – MRY
- 343 *P. esperella* (Goeze) = *quinnata* (Geoffr.) – Porlock (**5**) mines on *Carpinus* 28.x.95 – JR; Dumplington (**59**) mines on *Carpinus* 22.viii.95 – L.W. Hardwick per SHH

- 344 *P. strigulatella* (Zell.) – Warwicks (**38**) several localities 1992–95 – J. Robbins, *Ent. Rec.* **108**: 305
- 349 *P. nigrescentella* (Logan) – Abbots Kerswell (3) mines on *Trifolium repens* – B.P. Henwood, *BJENH* **9**: 220
- 351 *P. lautella* (Zell.) – Chambers Farm Wood (**54**) tenanted mines on *Quercus* 4–5.xi.95, moths bred – AME
- 352 *P. schreberella* (Fabr.) – Chambers Farm Wood (**54**) tenanted mines on *Ulmus* 4–5.xi.95 – AME
- 356 *P. tristrigella* (Haw.) – Wolfscastle (**45**) several mines on *Ulmus procera* 12.ix.95 – AME & JRL; Lord's Lot Wood, near Borwick (**60**) tenanted mines on *Ulmus* xi.95, moths bred – AME
- 362 *P. acerifoliella* (Zell.) – Gait Burrows NR (60) tenanted mines on *Acer campestre* 18.x.95 – AME
- 363 *P. platanoidella* (Joan.) – Washingborough (**54**) tenanted mines on *Acer platanoides* 5.xi.95 – AME
- 364 *P. geniculella* (Rag.) – Wolfscastle (**45**) several mines on *Acer pseudoplatanus* 12.ix.95 – AME & JRL
- 366 *P. sagitella* (Bjerk.) – Pershore (37) mines 3.ix.95, two moths bred – ANBS, *Ent. Rec.*
- 368 *Phyllocnistis unipunctella* (Steph.) – Lightfoot Green (**60**) 10.ix.95 at m.v. light – SMP; Thorpe Hall, Rudson (61) 29.viii.95, mines on *Populus*, moths bred – HEB; Chambers Farm Wood (54) tenanted mines on *Populus* 4–5.xi.95 – AME

CHOREUTIDAE

- 390 *Choreutis diana* (Hübner) – Glen Affric (96) several 16.viii.95 – KPB, *BJENH* **9**: 218

YPONOMEUTIDAE

- 401 *Argyresthia laevigatella* (Heyd.) – Old Pond Close (**32**) 4.vii.95 – DVM
- 410 *A. brockeella* (Hübner) – Cornhill (**94**) vii.95 – MRY & RL
- 426 *Yponomeuta malinellus* Zell. – Sharnbrook (**30**) 19.vii.96 – DVM
- 428 *Y. rorrella* (Hübner) – Kenfig (**41**) vii.95 – DLS. **New to Wales**, *antea*: 34
- 437 *Swammerdamia caesiella* (Hübner) – Winmarleigh Moss (**60**) 3.vii.95 – SMP
- 442 *Cedestis gysseleniella* Zell. – Great Staughton (31) 28.vii.95 – BD
- 443 *C. subfasciella* (Steph.) – Chambers Farm Wood (**54**) tenanted mines on *Pinus sylvestris* 4.xi.95 – AME
- 448 *Atemelia torquatella* (Zell.) – South Shian (98) viii.95 – MRY
- 450 *Scythropia crataegella* (Linn.) – two Yorks localities (63) 1.ix.95, possibly a second generation – HEB
- 453 *Ypsolopha dentella* (Fabr.) – Pennerley (40) 26.vi.94 – D. Poynton, *Ent. Rec.* **108**: 25
- 455 *Y. scabrella* (Linn.) – Pennerley (40) 26.vi.94 – D. Poynton, *Ent. Rec.* **108**: 25
- 456 *Y. horridella* (Treits.) – Luffenham Heath (**55**) 11.viii.95 – A.P. Russell per AME
- 459 *Y. sylvella* (Linn.) – Little Budworth Common (58) 8.x.94 – per SH

- 462 *Y. sequella* (Clerck) – Pennerley (40) 26.vi.94 – D. Poynton, *Ent. Rec.* **108**: 25
- 465 *Plutella porrectella* (Linn.) – Pennerley (40) larvae, moths bred 24.v.94 – D. Poynton, *Ent. Rec.* **108**: 25
- 470 *Orthotelia sparganella* (Thunb.) – Kenfig NNR (**41**) 10.vii.95; Waterhall Plantation (41) 26.vii.95; Michealston Marsh (41) 28.vii.95 – DJS
- 476 *Acrolepia autumnitella* Curt. – larva feeding on tomato (*Lycopersicon esculentum*) – JRL, *Ent. Gaz.* **47**: 8

EPERMENIIDAE

- 479 *Cataplectica farreni* Wals. – *Heracleum sphondylium* confirmed as a foodplant, MRY, *Ent. Rec.* **109**: 57
- 483 *Epermenia chaerophyllella* (Goeze) – Lightfoot Green (60) 11.x.95 – SMP

COLEOPHORIDAE

- 490 *Coleophora lutipennella* (Zell.) – Gait Burrows NR (**60**) larval cases on *Quercus* 18.x.95; Keswick (70) 23.x.95 – AME
- 496 *C. milvipennis* Zell. – South Shian (98) viii.95 – MRY
- 497 *C. badiipennella* (Dup.) – Yardley Chase (**32**) 17.x.95 – DVM
- 499 *C. limosipennella* (Dup.) – Old Pond Close (**32**) v.vii.95 – DVM
- 501 *C. siccifolia* Staint. – Sane Copse (**32**) 9.vii.95 – DVM
- 510 *C. juncicolella* Staint. – Crymlyn Burrows (**41**) cases 25.ix.95 – DJS; Chesters (**80**) one 14.vi.95 – AME & JRL; Cornhill (**94**) vi.95 – MRY & RL
- 513 *C. potentillae* Elisha – Chambers Farm Wood (**54**) larval feeding on *Rubus caesius* 4–5.xi.95 – AME
- 516 *C. trifolii* (Curt.) – Corby (**32**) 2.vii.94 – D.H.Howton; Aberthaw Leys (**41**) 13.vii.95 – DJS, **New to Wales**
- 517 *C. frischella* (Linn.) – Porlock (**5**) 16.vii.95 – JR
- 523 *C. hemerobiella* (Scop.) – Luton Hoo (**30**) 25.vii.95 – DVM
- 526 *C. laricella* (Hübner) – Selkirk (**79**) one case on *Larix* 12.vi.95 – AME & JRL
- 530 *C. lixella* Zell. – Great Doward (36) bred 15.vii.95 – MWH; Kenfig NNR (**41**) 10.vii.95 – DJS
- 533 *C. anatipennella* (Hübner) – Name established as valid in place of *bernoulliella* (Goeze) – AME, *Ent. Gaz.* **47**: 89–91
- 537 *C. palliatella* (Zinck.) – Name established as valid in place of *kuehnella* (Goeze) – AME, *Ent. Gaz.* **47**: 89–91, not accepted by Karsholt & Razowski, 1996
- 541 *C. pyrrhulipennella* Zell. – A life history study – J.Feehan, *Ent. Gaz.* **47**: 169–177
- 549 *C. pennella* ([D.&S.]) = *onosmella* (Brahm) – Shrewton Folly (**8**) cases on *Echium vulgare* 5.v.95, moths bred – E.G. & M.H. Smith, *BJENH* **9**: 224
- 555 *C. follicularis* (Vallot) – Castlemorton Common (**37**) 20.v.95 cases on *Pulicaria* – ANBS

- 561 *C. therinella* Tengst. – Savernake Forest (7) 29.vi.94 – M.H. Smith, *Ent. Rec.* **108**: 141–142
- 563 *C. argentula* (Steph.) – Wolfscastle (45) a few cases on *Achillea millefolium* 13.ix.95 – AME & JRL
- 567 *C. adpersella* Ben. – Studham (30) 11.vii.95 – DVM
- 568 *C. versurella* Zell. – West Melton (63) 15 & 17.vii.95 – HEB
- 572 *C. vestianella* (Linn.) – Rossington (63) 28.vii.93, 8.vii.95 – R.I. Heppinstall
- 582 *C. glaucicolella* Wood – Carr House Green Common (60) cases common on *Juncus effusus* 8.x.95 – SMP; Wolfscastle (45) a few cases on *Juncus* spp. 13.ix.95 – AME & JRL
- 588 *C. salicorniae* Wocke – Saffron Walden (19) 26.vii.95 – AME, *BJENH* **9**: 220

ELACHISTIDAE

- 593 *Elachista regificella* (Sirc.) – Dura Den (85) mines in *Luzula sylvatica* 10.vi.95, moth bred – KPB, *BJENH* **9**: 218
- 601 *E. albifrontella* (Hübner) – Grafham Water (31) 5.vi.95 – BD
- 606 *E. humilis* Zell. – Ettrickbridge (79) one vacated mine on *Deschampsia cespitosa* 12.vi.95; Nisbet (80) one vacated mine on *D. cespitosa* 14.vi.95 – AME & JRL; Silverwells, Coldingham (81) one 15.vi.95 – KPB, AME & JRL
- 608 *E. rufocinerea* (Haw.) – Kirk Yetholm (80) a few 10.vi.95 – AME & JRL
- 616 *E. bedellella* (Sirc.) – Linkim Bay (81) mines in *Helictotrichon pratense* 15.vi.95, moth bred – KPB, *BJENH* **9**: 218
- 628 *Biselachista eleochariella* (Staint.) – Cornhill (94) vi.95 – MRY & RL
- 629 *B. utionella* (Frey) – Gozzards Ford, Abingdon (22) 31.vii.95 – MFVC, *BJENH* **9**: 219

OECOPHORIDAE

- 636 *Denisia similella* (Hübner) – Glendoll Lodge (90) 9.vii.95 – KPB, *BJENH* **9**: 218
- 642 *Crassa unitella* (Hübner) – Alveston (57) 1.viii.95 – I. Travers–Ayre per KVC
- 656 *Tachystola acroxantha* (Meyr.) – Sale (58) 3.vi. & 30.vii.95 – P.B. Hardy per SHH, and records from the Manchester area since 1986
- 658 *Carcina quercana* (Fabr.) – Hampstead (21) 11.xi.95, a very late date – RAS
- 664 *Diurnea lipsiella* ([D.&S.]) = *phryganella* (Hübner) – Chambers Farm Wood (54) 4–5.xi.95 – AME
- 676 *Depressaria pulcherrimella* Staint. – Bullock Down (14) larva on *Seseli libanotis* 27.v.95, moth bred – MSP, RJH & JRL, *Ent. Gaz.* **47**: 30
- 678 *D. sordidatella* (Tengst.) = *weirella* Staint. – Low Row (65) five, 2.viii.95; West Melton (63) several vii.95 – HEB
- 697a *Agonopterix kuznetzovi* Lvovsky – Kynance (1) 4.iv.95, a post hibernation record – A. Spalding, *Ent. Gaz.* **47**: 150

- 702 *A. assimilella* (Treits.) – Pennerley (40) larvae 7.v.94, moth bred – D. Poynton, *Ent. Rec.* **108**: 26
- 708 *A. carduella* (Hübner.) – Studham (**30**) 16.viii.95 – DVM
- 711 *A. curvipunctosa* (Haw.) – Berrow (6) 30.iii.95 – B.E. Slade, *Ent. Rec.* **109**: 41
- 713 *A. angelicella* (Hübner.) – Cloud Wood, Breedon-on-the-Hill (**55**) 26.vii.95 – A. P. Russell per AME
- 718 *Ethmia dodecea* (Haw.) – Luffenham Heath (**55**) 23.vi. & 7.vii.95 – A. P. Russell per AME

GELECHIIDAE

- 733 *Eulamprotes wilkella* (Linn.) – Kenfig NNR (**41**) in Malaise trap 14.viii. – 1.ix.95 – DJS
- 740 *Monochroa hornigi* (Stdgr) – Savernake Forest (**7**) 29.vi.94 – M. H. Smith, *Ent. Rec.* **108**: 141–142
- 740a *M. niphognatha* (Gozm.) – Stodmarsh NNR (15) six at m.v. light 20.vi.95 – DO'K
- 743 *M. elongella* (Hein.) – Stodmarsh NNR (**15**) one at m.v. light 20.vi.95 – DO'K
- 748 *Ptocheuusa paupella* (Zell.) – Tourig Estuary (**H5**) two bred from *Pulicaria* 8.viii.95 – KGMB
- 749 *Sitotroga cerealella* (Ol.) – Southsea (**11**) one at m.v. light 28.vii.95 – JRL, *Ent. Gaz.* **47**: 50
- 757 *Recurvaria nanella* ([D.&S.]) – Old Fletton (**31**) viii.95 – BD
- 758 *R. leucatella* (Clerck) – Porlock (5) at m.v. light 27.vii.95 – JR
- 776 *Teleiopsis diffinis* (Haw.) – Lightfoot Green (**60**) 19.viii.95 at m.v. light – SMP
- 778 *Bryotropha umbrosella* (Zell.) – Bamburgh (**68**) a few 16.vi.95 – AME & JRL
- 779 *B. affinis* (Haw.) – Kenfig NNR (**41**) in Malaise trap 25.vii. – 13.viii.95 – DJS
- 780 *B. similis* (Staint.) – Lytham St Annes LNR (**60**) 13.viii.95 – SMP
- 781 *B. mundella* (Dougl.) – Bamburgh (**68**) several 16.vi.95 – AME & JRL
- 786 *B. desertella* (Dougl.) – Dale Top Quarry (**58**) 25.vii.94, det HEB – SHH
- 787 *B. terrella* ([D.&S.]) – Lytham St Annes LNR (**60**) 11.viii.95 – SMP
- 788 *B. politella* (Staint.) – Low Row (**65**) 23.vii.95 – HEB
- 792 *Mirificarma mulinella* (Zell.) – Selkirk (**79**) a few vacated larval feedings in flowers of *Cytisus scoparius* 12.vi.95 – AME & JRL
- 794 *Lita sexpunctella* (Fabr.) – Nipstone Rock (40) 31.v.94 – D. Poynton, *Ent. Rec.* **108**: 25
- 796 *Aroga velocella* (Zell.) – Low Row (**65**) 7.viii.95 – HEB
- 801a *Gelechia senticetella* Stdgr – Petts Wood (16) many at m.v. light vii.-viii.95 – DO'K; Saffron Walden (**19**) one at m.v. light 25.vii.95 – AME
- 808 *Platyedra subcinerea* (Haw.) – Richmond Park (**17**) 6.v.95 – MSP
- 819 *Scrobipalpa costella* (H. & W.) – Lightfoot Green (**60**) 26.vi. & 10.viii.95 at m.v. light – SMP; Kenfig NNR (**41**) in Malaise trap 14.viii. – 1.ix.95

- 820 *S. artemisiella* (Treits.) – Bamburgh (**68**) two 16.vi.95 – AME & JRL
 828 *Caryocolum viscariella* (Staint.) – Low Row (**65**) 6.viii.95 – HEB
 830 *C. fraternella* (Dougl.) – Low Row (**65**) 2.viii.95 – HEB
 831 *C. proximum* (Haw.) – Pucketty, Faringdon (22) bred 3.vii.95 from larvae on *Stellaria media* – MFVC, *BJENH* 9: 219
 833 *C. junctella* (Dougl.) – Wyre Forest NNR (**37**) 27.iv.94 – MWH & ANBS, *Ent. Rec.* **108**: 145–146
 840 *Thiotricha subocellea* (Steph.) – Linkim Bay (81) many adults 15.vi.95, larval cases on *Thymus* 22.viii.95 – KPB, *BJENH* 9: 218
 844 *Syncopacma larseniella* (Goz.) – Bransford (37) larva vi.94 on *Lotus corniculatus*, moth bred, genitalia det. – ANBS
 849 *S. cinctella* (Clerck) – Worcester (**37**) vii.1854 at light, specimen in Worcester museum, genitalia det. – ANBS
 854 *Anacamptis blattariella* (Hübner.) – Freshwater (**10**) 22.vi.95 – S.A. Knill-Jones, *Ent. Rec.* **108**: 18
 855 *Acompsia cinerella* (Clerck) – Low Row (**65**) 23.vii.95 – HEB
 858 *Hypatima rhomboidella* (Linn.) – Waterhall Plantation (**41**) 25.vii.95 – DJS
 861 *Telephila schmidtiiellus* (Heyd.) – Willingdon Dow (14) larvae v. 95; Rodborough Common (34) larvae 20.v.95 – MSP; Ford (**7**) larvae 8.vi.95, moths bred – E.G. & M.H. Smith, *BJENH* 9: 224
 871 *Oegoconia deauratella* (H.-S.) – Bluntisham (31) 7.vii.95 – BD; Rossington (**63**) 14.vii.95 – R.I. Heppenstall; Wroughton (7) 21.vii. – viii.95 – D.J. Brotheridge, *BJENH* 9: 218

BLASTOBASIDAE

- 873 *Blastobasis lignea* Wals. – Lightfoot Green (**60**) very common 13.vii. – 15.ix.95 – SMP; Gairloch (105) viii.95 – MRY; Waterhall Plantation (**41**) 26.vii.95 – DJS; Coventry (38) 1994–95 – R.C. Kendrick, *BJENH* 9: 221
 874 *B. decolorella* (Woll.) – New Mills (**57**) 1993 onwards – J. Potts per SHH; Swindon (**7**) 10.vii.95 – D.J. Brotheridge, *BJENH*; Cheylesmore, Coventry (38) common pre 1995 – R.C. Kendrick, *BJENH* 9: 221; Aspley Heath (24) 3.vii.95, Bledlow Ridge (24) 7.vii.95 – MVA; North Baddesley (11) 9.vi.95 – A.H. Dobson; Morden Bog (**9**) 24.vi.95 – PHS; Crymlyn Bog (**41**) 11.vii.95 – DJS, New to Wales, *Ent. Rec.* **109**: 31

MOMPHIDAE

- 881 *Mompha terminella* (H. & W.) – Whitland (**44**) a few tenanted mines on *Circaea lutetiana* 12.vi.95 – AME & JRL
 882 *M. locupletella* ([D.&S.]) – Cornhill (**94**) vii.95 – MRY & RL
 883 *M. raschkiella* (Zell.) – Cornhill (**94**) vii.95 – MRY & RL
 885 *M. conturbatella* (Hübner.) – Selkirk (**79**) a few larvae 12.vi.95; Kirk Yetholm (**80**) several larvae 10.vi.95; Coldstream (**81**) a few larvae 13.ix.95 – AME & JRL; Gresford (**50**) 12.vi.94 – D. Poynton, *Ent. Rec.* **108**: 25

- 886 *M. ochraceella* (Curt.) – Kenfig NNR (**41**) 10.vii.95 – DJS
 887 *M. lacteella* (Steph.) – Hilton (**31**) 28.vii.95 – BD
 890 *M. subdivisella* Bradl. – Petts Wood (**16**) 4.ix.95 – DO'K; Fareham (**11**) 12.iii.95 – R.J. Dickson, *Ent. Gaz.* **46**: 242
 891 *M. nodicolella* Fuchs – Farnborough (**12**) one 15.viii.95 – R.W. Parfitt per JRL

COSMOPTERIGIDAE

- 896 *Cosmopterix orichalcea* Staint. – Luccombe (5) 20.vii.95 – JR; Chambers Farm Wood (**54**) tenanted mines on *Phalaris arundinacea* 5.xi.95 – AME
 898 *Limnaecia phragmitella* Staint. – Waterhall Plantation (**41**) 26.vii.95 – DJS
 903 *Glyphipteryx linneella* (Clerck) – Yardley Chase (**32**) 1.viii.95 – DVM; Poole (9) larval workings on lime trees 4.v.95 – PHS
 904 *Spuleria flavicaput* (Haw.) – Kenfig NNR (**41**) 10.vii.95; Waterhall Plantation (41) 25.vii.95 – DJS

SCYTHRIDIDAE

- 911 *Scythris grandipennis* (Haw.) – Porlock (5) at m.v. light 9.vii.95 – JR

TORTRICIDAE

- 929 *Gynnidomorpha vectisana* (H. & W.) – Conheath, Clencaple (**72**) several, 10.viii.95 – HEB, **New to Scotland**
 930 *G. alismiana* (Rag.) – Little Paxton Pits (31) 29.vii.95 – BD
 945 *Aethes cnicana* (Westw.) – Cornhill (**94**) vi.95 – MRY & RL
 949 *A. dilucidana* (Steph.) – Crymlyn Burrows (**41**) 29.vii.95 – DJS, **New to Wales**, *Ent. Rec.* **109**: 32
 956 *Cochyliidia implicitana* (Wocke) – Spurn (**61**) 1995 – B.R. Spence det HEB
 964a *Cochylis molliculana* Zell. – Thorney Island (**13**) larvae in seedheads of *Picris echioides* 11.ix.94, one moth bred – MSP & JRL, *Ent. Gaz.* **47**: 50; Article on its biology – RJH & JRL, *Ent. Gaz.* **47**: 15–16
 965 *C. hybridella* (Hübner) – Gozzards Ford, Abingdon (22) 1995 – MFVC, *BJENH* **9**: 219
 989 *Aphelia paleana* (Hübner) – Pennerley (40) 21.vii.94 – D. Poynton, *Ent. Rec.* **108**: 26
 990 *A. unitana* (Hübner) – Low Row (**65**) 30.vi.95 – HEB
 998 *Epiphyas postvittana* (Walk.) – Fixton (**59**) 16.x.95 – K. McCabe; Dumplington (59) 22.viii.95 – L.W. Hardwick; Sale (58) 13.viii.95 – P.B. Hardy; Heald Green (58) 10.viii.95 – B.T. Shaw; all per SHH; Hampstead (21) 31.viii.95 – RAS; Climping Sands (13) two 10.x.95 – MSP; Farnborough (12) v–x.93, 94, 95 – R.W. Parfitt; Selborne (12) 21.viii.94 – A.E. Alston; Basingstoke (12) 8.x.95 – A.H. Dobson; Lightfoot Green (**60**) 21.viii. – 12.x.95 at m.v. light – SMP; Wroughton (7) 30.viii.95 – D.J. Brotheridge, *BJENH* **9**: 219

- 1001 *Lozotaeniodes formosanus* (Gey.) – Point House Farm (58) 2.viii.95 – C.I. Rutherford per SHH; New Mills (57) vii.95 – J. Potts per SHH; Prestbury (58) 14.vii.94, 7 & 27.vii.95 – D. Poynton, *Ent. Rec.* **108**: 25
- 1009 *Philedonides lunana* (Thunb.) – Whixall Moss (40) a few larvae on *Betula pendula* 23.ix.95, moths bred – AME & JRL
- 1012 *Sparganothis pilleriana* ([D.&S.]) – Porlock (5) at m.v. light 30.vii.95 – JR
- 1013 *Olindia schumacherana* (Fabr.) – Ballinger (24) 10.vii.95 – MVA
- 1014 *Isotrias rectifasciana* (Haw.) – Linkim Shore, Coldingham (81) a few 15.vi.95 – KPB, AME & JRL
- 1015 *Eulia ministrana* (Linn.) – Selkirk (79) several 12.vi.95 – AME & JRL
- 1016 *Cnephasia longana* (Haw.) – Lytham St Annes LNR (60) 13.vii.95 – SMP
- 1023 *C. genitalana* P. & M. – Reaveley Wood (31) 5.viii.95 – BD
- 1026 *Exapate congelatella* (Clerck) – Pennerley (40) 29.x.94 – D. Poynton, *Ent. Rec.* **108**: 26
- 1038 *A. laterana* (Fabr.) – Cornhill (94) viii.95 – MRY & RL
- 1043 *A. aspersana* (Hübner.) – Cornhill (94) vii.95 – MRY & RL
- 1051 *A. logiana* (Clerck) – Havant Thicket (11) one at rest on tree trunk 2.iv.95 – MSP & JRL
- 1068 *Olethreutes rivulana* (Scop.) – Porlock (5) at m.v. light 16.vii.95 – JR; Little Ballo, Coupar (90) vii.95 – MRY
- 1074 *O. palustrana* (L. & Z.) – Malham Tarn (64) several 29.vi.95 – MSP
- 1091 *Apotomis lineana* ([D.&S.]) – Saffron Walden (19) 11.viii.95 – AME, *BJENH* **9**: 220
- 1099 *Endothenia marginana* (Haw.) – Yardley Chase (32) 1.viii.95 – DVM
- 1103 *E. ericetana* (H. & W.) – Lightfoot Green (60) 7.vii.95 at m.v. light – SMP
- 1109 *Lobesia littoralis* (H. & W.) – Bridlington (61) 29.viii.95 – HEB; Cullen (94) vi.94 – MRY & RL
- 1110 *Bactra furfurana* (Haw.) – Cow Lane Pits (31) 29.vi.95 – BD
- 1113 *Eudemis profundana* ([D.&S.]) – Waterhall Plantation (41) 26.vii.95; Kenfig NNR (41) 10.vii.95 – DJS
- 1117 *Ancylis unguicella* (Linn.) – Hartlebury Common (37) 9.v.89 – J. Price per ANBS and 5.vi.94 – ANBS
- 1118 *A. uncella* ([D.&S.]) – Scarborough (62) 23.v.95 – M.R. Britton, *BJENH*
- 1121 *A. upupana* (Treits.) – Skipwith Common, Selby (61) 31.v.95 – M.R. Britton, *BJENH*; Ryton Wood, Warwicks (38) 11.viii.95 – R.C. Kendrick, *BJENH* **9**: 221
- 1124 *A. tineana* (Hübner.) – Struan (88) larval stages confirmed and described – KPB, *Ent. Gaz.* **47**: 17–18
- 1126 *A. badiana* ([D.&S.]) – Cornhill (94) vi.95 – MRY & RL
- 1136 *Epinotia immundana* (F. v. R.) – Gordon Moss (81) one 13.vi.95 – AME & JRL
- 1143 *E. fraternana* (Haw.) – Charterhall Wood (81) a few beaten from *Abies grandis* 13.vi.95 – AME & JRL

- 1144 *E. signatana* (Dougl.) – Drakes Broughton (37) beaten from *Prunus spinosa* 14.vi.94 – ANBS
- 1146 *E. rubiginosana* (H.-S.) – Lightfoot Green (60) 28.vi.95 – SMP
- 1152 *E. maculana* (Fabr.) – Pickworth Great Wood (55) 9.x.95 – A.P. Russell per AME
- 1155 *E. brunnichana* (Linn.) – Waterhall Plantation (41) 26.vii.95 – DJS
- 1157 *Crociosema plebejana* Zell. – Freshwater (10) 26.vii.95 – S.A. Knill-Jones, *BJENH* 9: 221
- 1166 *Zeiraphera diniana* (Guen.) – Selkirk (79) several vacated larval spinnings on *Larix* 12.vi.95 – AME & JRL
- 1169 *Gypsonoma dealbana* (Frl.) – Lightfoot Green (60) 2.vii.95 – SMP
- 1174 *Epiblema cynosbatella* (Linn.) – Cornhill (94) vi.95 – MRY & RL
- 1179 *E. incarnatana* (Hübner) – Spurn (61) 14.vii.95 – B.R. Spence det HEB
- 1184a *E. cirsiaria* (Zell.) – Halse Combe, Porlock (5) 30.v.95 – JR; Cullen (94) vi.95 – MRY & RL
- 1192 *Eucosma conterminana* (H.-S.) – Southsea (11) one at m.v. light 5.viii.95 – JRL; Wroughton (7) 20.vii. – 1.viii.95 – D.J. Brotheridge, *BJENH* 9: 219
- 1193 *E. tripoliana* (Barr.) – Crymlyn Burrows (41) 29.vii.95 – DJS, **New to Wales**
- 1197 *E. campoliliana* ([D.&S.]) – Cornhill (94) vi.95 – MRY & RL
- 1199 *E. pupillana* (Clerck) – Biggleswade (30) 1.viii.95 – R.C. Revels per DVM; Hampstead (21) 3.viii.95 – RAS
- 1205a *Spilonota laticana* (Hein.) – Lightfoot Green (60) 10.vii.95 – SMP
- 1207 *Clavigesta purdeyi* (Durr.) – Lightfoot Green (60) 11.viii.95 – SMP; Cold Oak Copse (32) 27.vii.95 – DVM
- 1210 *Rhyacionia buoliana* ([D.&S.]) – Lightfoot Green (60) 17.vii.95 – SMP
- 1215 *Cryptophlebia leucotreta* (Meyr.) – Worcester (37) bred from imported orange ix.95 – ANBS; Southsea (11) one at m.v. light 11.viii.95 – JRL, *Ent. Gaz.* 47: 50
- 1218 *Selania leplastriana* (Curt.) – Arish Mell (9) a few larvae in *Brassica oleracea* 2.xii.95 – PHS *et al.*
- 1232 *Pammene populana* (Fab.) – Monk Wood (37) 2 larvae on *Salix caprea* 14.vi.94, moths bred – ANBS
- 1235 *P. trauniana* ([D.&S.]) – Little Paxton Pits (31) 29.vii.95 – BD
- 1243 *Cydia pallifrontana* (L. & Z.) – Biddestone (7) larvae vii., moths bred 30.vii.95 – M.H. Smith, *Ent. Rec.* 108: 131–132
- 1248 *C. molesta* (Busck) – Malvern (37) bred 26.viii.94 from nectarine bought in shop – ANBS
- 1249 *C. prunivorana* (Rag.) – Weymouth (9) at m.v. light 10.vii.95 – PHS
- 1254 *C. strobilella* (Linn.) – Savernake Forest (7) a few bred from cones of *Picea omorika* collected 6.iii.95 – JRL, *Ent. Gaz.* 47: 8
- 1255a *C. medicaginis* (Kuzn.) – Gravesend (16) 27.vi.95 – DJLA
- 1262 *C. amplana* (Hübner) – St Helier, Jersey (113) 7.viii.95 – R. Burrow per E.G. Hancock, *Ent. Gaz.* 47: 179–180
- 1268 *C. coniferana* (Ratz.) – Stockgrove Country Park (30) v.95 – DVM
- 1272 *C. aurana* (Fabr.) – Cornhill (94) vi.95 – MRY & RL

ALUCITIDAE

- 1288 *Alucita hexadactyla* (Linn.) – Waterhall Plantation (**41**) 25.vii.95 – DJS

PYRALIDAE

- 1289 *Euchromius ocella* (Haw.) – Dungeness (15) 27.vii.95 – S. Clancy per BFS; Lizard (1) 14.x.95 – D.C.G. Brown; St Agnes, Scilly (1) 20.x.95 – J. Martin per BFS; Thundersley (18) 22.x.95 – D. Down per BFS
- 1290 *Chilo phragmitella* (Hübner.) – Kenfig NNR (**41**) 10.vii.95 – DJS
- 1292 *Calamotropha paludella* (Hübner.) – Cricklade (**7**) 6.viii.95 – APF, *Ent. Gaz.* **47**: 92; Spurn (**61**) 27.vii.95 – B. Elliott
- 1298 *Crambus ericella* (Hübner.) – Tairlaw Toll & near Loch Braden (**75**) 8.vii.95 – AMD
- 1310 *Catoptria permutatella* (H.-S.) – Cornhill (94) vii.95 – MRY & RL
- 1323 *Pediasia contaminella* (Hübner.) – Dawlish Warren (**3**) 25.vii.60 – A.H. Dobson, *BJENH* **9**: 219, apparently the earliest Devon record.
- 1324 *P. aridella* (Thunb.) – Redlynch Common (8) 7.vii.95 – MFVC, *BJENH* **9**: 219; Dawlish Warren (3) 24.vii.68 – A.H. Dobson, *BJENH* **9**: 219; Lakenheath (**26**) 15.vii.95 – D. Young, PPRS
- 1332 *Scoparia subfusca* Haw. – Cullen (**94**) vi.95 – MRY & RL
- 1335 *S. ancipitella* (La Harpe) – Herefordshire (36) viii.95 – MWH; Great West Wood (**53**) 21.vii.95 – R. Johnson, PPRS
- 1336 *Eudonia pallida* (Curt.) – Kenfig NNR (**41**) 9.viii.95 – DJS
- 1341 *E. lineola* (Curt.) – Cow Gap (14) 13 & 26.vii.95 – MSP
- 1348 *Parapoinx stratiotata* (Linn.) – Kenfig NNR (**41**) 10.vii.95; Michealston Marsh (41) 28.vii.95 – DJS
- 1350 *Nymphula stagnata* (Don.) – Kenfig NNR (**41**) 10.vii.95; Crymlyn Bog (41) 11.vii.95 – DJS
- 1354 *Cataclysta lemnata* (Linn.) – Kenfig NNR (**41**) 29.x.95 – DJS
- 1356a *Evergestis limbata* (Linn.) – Chale Green (10) 14 & 21.vii.95, suggesting resident status – S.R. Colenutt; Portslade (**13**) 11.ix.95 – A.R. Cronin
- 1357 *E. extimalis* (Scop.) – Hampstead (21) 5.viii.95 – RAS
- 1358 *E. pallidata* (Hufn.) – Kenfig NNR (**41**) 10.vii.95 – DJS
- 1360 *Hellula undalis* (Fabr.) – Portland (9) 11.viii.95 – M. Cade & 10.x.95 – BG; Lydd (**15**) 14.ix.95 – K. Redshaw; Lizard (1) ten 9-30.x.95 – D.C.G. Brown; Gaunts Common (9) 11.x.95 – P. Davey; Durlston (9) 26.x.95 – A. Kolas per BFS
- 1363 *Pyrausta ostrinalis* (Hübner.) – Geeston Quarry (**55**) v.95 – J.R. McPhail per AME
- 1368 *Margaritia sticticalis* (Linn.) – An immigration throughout July and August with almost 100 specimens recorded from Devon to Sutherland. A full list with precise data will appear in due course in the article on Migration in *Ent. Rec.* Vice-counties from which it is recorded are: 3, 6, **7**, 9, 10, 11, 13, 14, 15, 16, 17, 18, 20, 22, 26, 27, 28, 29, **30**, **32**, **33**, 38, 40, **49**, 53, 63, **65**, 71, 93, **94**, **108**.
- 1369 *Uresiphita polygonalis* ([D.&S.]) – Lizard (1) 17.x.95 – D.C.G. Brown per BFS

- 1370 *Sitochroa palealis* ([D.&S.]) – Cricklade (7) 27.vii.95 – APF, *Ent. Gaz.* **47**: 92
- 1374 *Microstega hyalinalis* (Hübner.) – Wendover Woods (24) 28.vii.95 – MVA; Great Doward (36) bred 15.vii.95 – MWH
- 1374a *Sclerocona acutellus* (Evers.) – Henley-on-Thames (**23**) 20.vi.95 – D. Wedd, *BJENH* **9**: 225, third British specimen.
- 1375 *Ostrinia nubilalis* (Hübner.) – Kingsthorpe (**32**) 20.vi.95 – P.B. Sharpe per DVM
- 1380 *Phlyctaenia perlucidalis* (Hübner.) – Crowle Moor (63) 1.vii.95 – HEB; Matlock (57) 14.viii.95 – B.L. Statham per KVC; Godshill (**10**) 27.vii.95 – P. Cramp, *Ent. Rec.* **108**: 18; Cawood (**64**) 1995 – J. Payne det HEB; Newstead Abbey Park (56) 3.viii.95 – KVC; Abbotsworthy (12) 5.vi.95 – A.H. Dobson, *BJENH* **9**: 220
- 1384 *P. stachydalis* (Germ.) – Herodsfoot (2) 19.vi.95; Bodmin Beacon (2) 7.vii.95 – A.R. Spalding, *Ent. Gaz.* **46**: 288
- 1382 *Anania verbascalis* ([D.&S.]) – Porton Down (**8**) 30.vii.95 – A. Steele, PPRS
- 1383 *Psammotis pulveralis* (Hübner.) – Matley Bog, New Forest (**11**) one by day 28.vii.95 – DO'K; Sixpenny Handley (9) 28.vii.95 – P. Davey – per BFS
- 1389 *Udea fulvalis* (Hübner.) – Freshwater (10) 11 & 17.vii.95 – S.A. Knill-Jones, *BJENH* **9**: 221; Summary of British records, with colour illustrations of early stages – BFS, *Ent. Rec.* **108**: 108–109
- 1392 *U. olivalis* ([D.&S.]) – Lamdoughty Glen (**75**) 8.vii.95 – AMD, PPRS
- 1396 *Mecyna flavalis* ([D.&S.]) ssp. *flavicularis* (Carad.) Hartslock NR (22) 10.vi.95 – M. Harvey, *BJENH* **9**: 220
- 1398 *Nomophila noctuella* ([D.&S.]) – Cullen (**94**) vi.94 – MRY & RL
- 1399 *Dolicharthria punctalis* ([D.&S.]) – Porlock (5) three at m.v. light 4–6.vii.95 – JR
- 1400 *Antigastra catalaunalis* (Dup.) – Dungeness (15) 12.x.95 – S. Clancey; Portland (**9**) 9.x.95 – M. Cade; Gaunts Common (9) 11.x.95 – P. Davey; Parkstone (9) 21.x.95 – A. Bromby; all records per BFS
- 1404 *Hymenia recurvalis* (Fabr.) – Portland (9) 10–11.x.95 – M. Cade; West Bexington (9) 11.x.95 – R. Eden; Lizard (**1**) 17.x.95 – D.C.G. Brown, all per BFS
- 1408 *Palpita unionalis* (Hübner.) – Portland (9) one at m.v. light 14.x.95 – B. Goater, PHS & JRL; Southsea (11) singletons at m.v. light 13, 17, 23 & 26.x.95 – JRL; Porlock (5) at m.v. light 11.xi.94 – JR
- 1413 *Hypsopygia costalis* (Fabr.) – Conheath, Clencaple (**72**) 12.viii.95, one at light – HEB; Low Row (**65**) 2.viii.95 – HEB
- 1416 *Pyrallis lienigialis* (Zell.) – Cricklade (7) 24.vi.94 & 21.viii.95 – APF, *Ent. Gaz.* **47**: 92
- 1424 *Endotricha flammealis* ([D.&S.]) – Waterhall Plantation (**41**) 25.vii.95 – DJS; Cold Oak Copse (**32**) 27.vii.95 – DVM
- 1425 *Galleria mellonella* (Linn.) – Glapwell (**57**) 27.vii.95 – J. Culpin per KVC; Alveston (57) 2.viii.95 – I. Travers-Ayre per KVC
- 1432 *Anerastia lotella* (Hübner.) – Lytham St Annes LNR (**60**) 27.vii.95 – SMP

- 1435 *Acrobasis tumidana* ([D.&S.]) – Southsea (**11**) 30.vii.95 – JRL & Christchurch (11) 4.viii.94 – M. Jeffs, *Ent. Gaz.* **47**: 30
- 1438 *Numonia suavella* (Zinck.) – Pegsdon Hills (**30**) 14.vii.95 – DVM; Waterhall Plantation (**41**) 26.vii.95 – DJS
- 1446 *Salebriopsis albicilla* (H.-S.) Summary of British records, with colour illustrations of early stages – BFS, *Ent. Rec.* **108**: 110–111
- 1451a *Etiella zinckenella* (Treits.) – Christchurch (11) 11.viii.95 – M. Jeffs per BFS
- 1452 *Phycita roborella* ([D.&S.]) – Waterhall Plantation (**41**) 26.vii.95 – DJS
- 1454 *Dioryctria abietella* ([D. & S.]) – Alderley Edge (58) 1991 & 1995 – C.I. Rutherford per SHH
- 1454a *D. schuetzeella* Fuchs – Dubeley Wood (31) 28.vii.95 – BD
- 1461 *Assara terebrella* (Zinck.) – Saffron Walden (19) one at m.v. light 18.vii.95 – AME
- 1461a *Eccopisa effractella* Zell. – Buckingham Palace, London (**21**) 13.vii.95 – DJLA, **New to Britain**, *Ent. Gaz.* **47**: 181–183
- 1467 *Ancylosis oblitella* (Zell.) – Southsea (11) one at m.v. light 10.viii.95 – JRL; Kingsthorpe (**32**) 8.ix.95 – P.D. Sharpe per DVM
- 1469 *Euzophera cinerosella* (Zell.) – Beeston Sidings (56) 5.vii.95 – Notts. Wildlife Trust per KVC; Corby (**32**) 7.vii.95 – DHH; Raynes Park (17) 3.vii.95 – MSP
- 1470 *E. pinguis* (Haw.) – Waterhall Plantation (**41**) 25.vii.95; Michealston Marsh (41) 28.vii.95 – DJS
- 1475 *Ephestia kuehniella* Zell. – Lightfoot Green (**60**) 26.x.95 indoors – SMP
- 1477 *E. figulilella* Gregs. – Godshill (**10**) 1991 – P.J. Cramp, *BJENH* **9**: 219
- 1479 *Plodia interpunctella* (Hübner.) – Preston (**60**) in pet shop 21.vii.95 – SMP
- 1480 *Homoeosoma nebulella* ([D.&S.]) – Porlock (**5**) at m.v. light 11.vii.95 – JR
- 1484 *Phycitodes saxicola* (Vaugh.) – Lytham St Annes LNR (**60**) 13–27.vii.95 – SMP; Corby (**32**) 10.viii.95 – D.H. Howton; Cheylesmore, Coventry (38) 15.viii.95 – R.C. Kendrick, *BJENH* **9**: 221
- 1485 *P. maritima* (Tengst.) – Brampton Wood (31) 1.vii.95 – BD
- 1486 *Apomyelois bistriatella* (Hulst) ssp. *neophanes* (Durr.) – Raynes Park (17) 15.viii.95 – MSP

PTEROPHORIDAE

- 1488 *Agdistis bennetii* (Curt.) – Buckland, Reigate (**17**) 20.viii.95 – C. Hart, *BJENH* **9**: 220
- 1492 *Crombrugghia laetus* (Zell.) – Gaunts Common (9) 12.x.95 – P. Davey, gen. det. PHS; Summary of records with colour plate of adult and genitalia illustrations – C. Hart, *Ent. Rec.* **108**: 113–117
- 1494 *Capperia britanniodactyla* (Gregs.) – Hartlebury Common (37) very locally common on *Teucrium* 30.v.94 – ANBS
- 1497 *Amblyptilia acanthadactyla* (Hübner.) – Sandy (**30**) 10.vii.95 – DVM; Cornhill (94) v.95 – MRY & RL

- 1498 *A. punctidactyla* (Haw.) – Studham (**30**) 17.vii.95 – DVM; Selkirk (**79**) two 12.vi.95 – AME & JRL; Cornhill (94) vii.95 – RL
- 1500 *Platyptilia calodactyla* ([D.&S.]) – Gosberton (**53**) 11 & 13.vi.94 – M.A. Joy, PPRS
- 1504 *P. pallidactyla* (Haw.) – Cullen (**94**) vi.94 – MRY & RL
- 1506 *Stenoptilia millieridactyla* (Bruand) = *saxifragae* Fletch. Higher Poynton (58) 3–22.vii.94 – SHH
- 1507 *S. zophodactylus* (Dup.) – Beeley Moor (**57**) 2.x.95 – B. Statham per KVC
- 1508 *S. bipunctidactyla* (Scop.) – West Wood, Knotting (**30**) 14.viii.95 – DVM
- 1509 *S. pterodactyla* (Linn.) – Cornhill (**94**) vi.95 – MRY & RL
- 1518 *Hellinsia lienigianus* (Zell.) – Upton Warren (**37**) 1.vii.94 at light – J4 ANBS; West Melton (63) 31.viii.95 – HEB
- 1523 *Oidaematophorus lithodactyla* (Treits.) – Clayton Green (**59**) four amongst *Pulicaria* 31.vii.95 – SMP

Correction to 1994 Review

- 1494 *Capperia britannioidactyla* (Gregs.) – Record from Ballaglass misidentified – should be deleted.

Ectoedemia quinquella (Bedell, 1848) (Lep.: Nepticulidae) in the Reading area.

I wish to report the discovery of the above species at Lower Earley, at Dinton Pastures Country Park and at Bear Wood near Wokingham. These sites are within four or five miles of each other situated to the south and east of Reading, Berkshire.

At Lower Earley, *E. quinquella* abounds on a group of oaks *Quercus robur* growing along a field boundary just south of the River Lodden, near Lodden Bridge. Here I have seen mines for the past three or four years. Last year (autumn 1996) they were particularly abundant; one leaf I examined contained thirty-five to forty larvae. Adults have been successfully reared from this site on two occasions. Identical mines, though fewer in number, containing the characteristically spotted early-instar larvae were noted in the autumn of 1996 in oaks growing in Bear Wood near Wokingham and two adults were netted by day flying around oak trees during a meeting of the British Entomological and Natural History Society's Conservation Group held at Dinton Pastures on 7 July 1996. These sites are all located in the eastern part of Berkshire (VC22). Baker (1994, *The Butterflies and Moths of Berkshire*. Hedera Press) gives one locality in Berkshire for this species

since the 1930s, at Buckland Warren which is at the other end of the county from Reading. Further searches in the Reading area will be made in the coming autumn to ascertain the extent of this moth's distribution in the area.— I. SIMS, 2 The Delph, Lower Earley, Reading, Berkshire RG6 3AN.

Early appearance of *Macroglossum stellatarum* L. (Lep.: Sphingidae)

An adult Humming-bird Hawk-moth *Macroglossum stellatarum* was seen hovering over the flowers of Japanese quince in my garden here on 19 March 1997.— L. CHRISTIE, 129 Franciscan Road, Tooting, London SW17 8DZ.

***Spodoptera litura* (Fabr.) (Lep.: Noctuidae): a pest of a medicinal plant at 1685 metres (5500 feet) altitude in the Kumaon Hills, India**

During a survey of the insect pests of medicinal and aromatic plants in Central Himalaya, larvae of *Spodoptera litura* (Fabr.) were observed heavily infesting plants of Egyptian Henbane *Hyocyamus niger* – a source of trophane alkaloids – in the Kumaon Hills of India. *S. litura* is known to damage jute, fibre crop, linseed, pulses and millet (Nair, 1986, *Insect and mites of crops in India*. Indian Council of Agricultural Research) and is a minor pest of bananas. David and Nandagopal (1986, Pests of sugarcane: distribution, symptomology of attack and identification, in *Sugarcane Entomology in India*, ICAR, New Delhi), reported it as an occasional defoliator of sugarcane. In the Kumaon Hills, the larvae were infesting the floral parts of plants during the months of August and September.

Egyptian Henbane is one of the more important medical plants and is a source of the trophane alkaloid hyoscyne. Medicines prepared from the plant are used to treat a variety of diseases and ailments including worms, coughs, liver pain, heart disease, intestinal disorders etc. (Pant and Pandey, 1991, Kumaon Ki Upyogi aushadhiya vanasptiyan, *Uttarakhand Sodh Sansthan*, pp. 1-35). The plant occurs naturally in the middle hills of Central Himalaya at 2450 to 3370 metres (8000 to 11000 feet) altitude and has been introduced at lower altitudes for cultivation purposes.

The green larvae were collected and reared on the host plant in the laboratory. They emerged after twelve days in the pupal stage. Males and females survived for four and six days respectively. Under laboratory conditions, one larva was observed to devour one plant with five leaves in a single day. From the available literature, this would appear to be the first record of *S. litura* feeding on Egyptian Henbane in the Central Himalayas. We are grateful to Dr J.D. Holloway and the Director of the Institute of Entomology, CAB, London, for the identification of the insect.

— MOHOMMAD ARIF & NARENDRA KUMAR, Defence Agriculture Research Laboratory, Pithoragarh (UP), 262501 India.

CHRISTMAS IN HONG KONG

BRIAN BAKER

25 Matlock Road, Caversham, Reading, Berkshire RG4 7BP.

IN THE STEAMY heat of that September afternoon, a large green Swallowtail butterfly flew through the open window of the house opposite our commandeered quarters in 47 Hankow Street. From our enforced confinement I watched the beautiful creature as it beat against the glass in its attempts to escape. A Chinese lady then entered the room, delicately took a wingtip 'twixt thumb and finger, extended her arm over the street and released the butterfly into the sun.

This little episode from fifty years ago took place in Kowloon opposite Hong Kong Island, itself, as I remember it, a place of great beauty. I am told that today a tunnel connects island to mainland and, traffic allowing, access is quicker and easier. Perhaps this is so, but I doubt that many Swallowtail butterflies still flit in and out of windows in Hankow Street.

My early years had been happy, uncomplicated ones with exhortations from loving parents to do well at school, always tell the truth, not to worry if you can't do those maths and "now don't let that master frighten you". Then one afternoon after school I called into my local museum and met the kindest of men. A born naturalist who took me under his wing, taught me the names of plants and animals, loaned me all manner of natural history books, took me to his favourite places and opened my eyes.

I was to benefit from his kindly teaching for over thirty years but wartime disrupted those carefree days and visits back home were few but precious. We did find enough petrol to motorcycle to Wicken Fen in the sunny spring of 1945 but within a few weeks Wicken swallowtails were a world away.

On 7 July a long journey began, its destination unknown, schoolboy geography became reality, and through it all that early nurturing in natural history proved invaluable. Manx shearwaters off the Pembrokeshire coast gave way to Atlantic dolphins, porpoises and cascades of flying fish. Panama with its tropical greenery, birds and butterflies gave way to the Pacific, a vastness seemingly unwilling to give way to anything. Pearl Harbour, first glimpsed as the sun turned the mountains golden, made a welcome break, of necessity brief, then it was off again with the Empress of Australia protected by six destroyers.

One of our medical officers loaned me his copy of *Insects of Hawaii* and I was deep into its butterflies and moths whilst, unknown to everyone, momentous events were taking place over Hiroshima and Nagasaki. On 15 August news filtered through that Japan had accepted surrender terms and the next day we anchored off the Marshall Islands where, a year later, the world would hear of Bikini Atoll and the beginning of the United States atomic tests. A period of uncertainty followed and it wasn't until 24 August

whilst in the Admiralty Islands that we learnt that Okinawa, our original destination, would be replaced by Hong Kong. But first, small detachments were given a brief period ashore and we hesitantly stepped into paradise – the tiny island of Pityilu.

My Royal Air Force colleagues were content with the “refreshments” they had carried ashore but they missed the bright green lizards that stared with red eyes, the gauzy-winged grasshoppers which whirred away over the grasses and the lagoon where I swam to the limit of the reef. Regardless of depth, the water was crystal clear and I played patience with multi-coloured clouds of little tropical fish. Who could have missed the wonder of living jewels swimming between one’s legs? Pityilu became only a dream for in less than a week the Pacific said its goodbyes with a vengeance – the typhoon began off the Phillipines and ended the day before we entered the calm of Hong Kong’s anchorage.

As the great liner approached Kowloon quayside, ships of the Pacific Fleet stood at boat stations, sampans and latticed-sailed junks vied with each other for clear water and a small group of service and civilian personnel, survivors of the previous three and a half years, proudly stood at attention far down below.

The Japanese had yet to be disarmed and we were initially confined within 47 Hankow Street awaiting instructions. That Swallowtail butterfly across the street and Chinese children flying praying mantids from silken tethers were only promises of the normality that eventually returned.

By 7 October I was posted to Air Headquarters on Hong Kong Island and worked there for the next five months. The elegant old Victorian building was close to the lower terminus of the now silent Peak Mountain Railway and our living quarters were easiest reached by walking a short distance up the line.

Wireless operators work round the clock so there were regular off-duty days, days on which to watch Monarch butterflies and Long-tailed blues within our very overgrown garden; days on which to toil up the railway track and, on reaching The Peak, walk into another world. A world of hills and islands, bays and inlets, the sight of which made the heart sing.

I came to know these hills well and each became of greater interest through chance meetings with an entomologist and a botanist. Major Eggleton of the Royal Army Medical Corps had collected here in peacetime and knew the names of all the butterflies. Father Ryan at the Forestry Office talked of plants and kindly loaned me *Familiar Wild Flowers of Hong Kong*. I managed to send small consignments of carefully packed insects back to my old friend in England, he in return, sent me the Natural History Museum’s *Instructions for Collectors* – the much thumbed copy is with me still.

I also remembered a technique he had often demonstrated when returning from our late night mothing expeditions. Hawkmoths would eventually tire

of encircling the tall mercury vapour lamps, newly installed along town streets, and would sit quietly just below the bright-blue glare. From this lofty resting place a slight touch with the tip of a three-joint fishing rod would induce them to spiral down to the pavement. English fishing rods had not yet reached Hong Kong but very long bamboo poles on which the Chinese hung their washing were stored in plenty at the rear of Air Headquarters. Would this modified technique work with the delicate green, long-tailed Moon moths of Hong Kong? Just before midnight, and with great difficulty, I withdrew my bamboo pole but immediately regretted doing so. It was gigantic, of the order of 40 feet! I approached my mercury vapour lamp rather unsteadily but found that the road, even at this late hour, was busy with cars returning their officers from varied engagements. My courage failed me and I would have welcomed a power cut.



Pre-war Hong Kong – the view from The Peak across to Kowloon and beyond.

Someone trying to manoeuvre 20 feet of oscillating bamboo fore and aft is a rarity in any road, anywhere, and documentary evidence shows that it only occurred once – in Queen's Road, Hong Kong, in late 1945!

On Christmas Day the Peak Railway restarted and, after the traditional meal a few of us rode up in unaccustomed style. We climbed Mount Kellett and rested whilst the sun streamed over all the islands – on this date four

years earlier Hong Kong had fallen. Those early weeks of discovery would never occur again. They took place at the close of one chapter of the Island's history, the next had yet to be written.

Back in the fields and woods of England in 1947 little seemed to have changed, but change was coming and the countryside would never feel the same again. That countryside has now been subjected to endless regulations; some of these have been welcomed, other are thought to spell doom. One eminent author has described the 1981 Wildlife and Countryside Act as "the most oppressive piece of legislation since children were hung for stealing apples"! Land, wherever it happens to be, is finite for, as Mark Twain once observed "they've stopped making it".

With this thought in mind and whatever the pros and cons of particular proposals, there is without any doubt much to admire in the field of nature conservation in this small island of ours. But one wonders for the future of that other tiny island on the hem of China and which returns to her control in July 1997.

Our protracted journey there took just over eight weeks, but Hong Kong can now be reached by a flight of 13-14 hours. Friends have told me of their recent visits but the place they describe holds few attractions. With agricultural land scarce, tourism a major source of revenue and a population in excess of five and a half million, the remoteness has gone, and there's no putting back the clock – not for all the tea in China.

Xylena exsoleta L. (Lep.: Noctuidae): an old record

I was most interested in the note on the early stages of *Xylena exsoleta* (*antea*, 65-75) and especially to learn that so few fully-grown larvae have been recorded in the wild. In view of this I would like to place on record the finding of a fully-grown larva way back in 1938. This was on a railway embankment at Loughton, north Buckinghamshire (LMS and good old steam in those days!). A rich hunting-ground marvellous for butterflies and supporting strong colonies of the Chimney Sweeper *Odezia atrata* L., The Four-spotted *Tyta luctuosa* D.& S. and The Forester *Adscita statices* L. I still have specimens of these dating back to the 1930s.

I recall the finding of this larva so clearly and even remember that it was feeding on *Potentilla reptans*. I have no doubt whatsoever regarding this record, it remains so clear in my memory.

Unfortunately I was relieved of the creature by an uncle who was returning to Stamford the following day and I know not of its fate. I shall always be grateful to this said uncle, however, as he introduced me to Lepidoptera long before I started school in 1927 and it has remained a fascinating interest ever since.— G.E. HIGGS, The Cottage, Willen, Milton Keynes, Buckinghamshire MK15 9AD.

ONE AND A HALF YEARS OF KENYAN ORTHOPTERA:
II. PAMPHAGIDAE, PYRGOMORPHIDAE, LENTULIDAE
AND SPUR-THROATED ACRIDIDAE

JOHN PAUL

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THE RICHNESS OF the Kenyan grasshopper fauna owes much to the country's geography and ecological diversity: in the west are grasshoppers typical of central Africa; the Indian Ocean coast has its own special fauna and the forests and pastures of the highlands support a number of montane endemics such as *Parasphena* spp., *Kinangopa jeanneli* and *Pezocatantops* spp. In terms of African biogeography, Kenya is Afrotropical and at the boundary of the Sudanian and Somalian sub-zones (Dirsh, 1966). The semi-desert and thorn scrub of the Rift Valley allows Somalian species like *Pycnodictya kelleri* and *Oedaleus instillatus* to penetrate far into the country. Most of the African subfamilies recognised by Dirsh (1965) are represented in Kenya, including some genera from the mainly southern African groups Porthetinae, Lentulidae and Euryphyminae.

A representative collection of grasshoppers was made while resident between 1991 and 1993 and on other visits. Most genera were readily identified using Dirsch (1965), whilst determination of species was achieved using many works listed by Johnston (1968) and Ritchie (1987) and by reference to collections at BM(NH) and the National Museum in Nairobi. Many African genera are unrevised, rendering accurate identification to species difficult.

Pamphagidae: Porthetinae

Lobosceliana gilgilensis (Bolivar). Split Crater, near Lake Elmenteita, 13.xii.1992, two females in long grass. These massive grasshoppers made no attempt to escape and were easily picked up by hand. In life the cervical membrane is lilac in colour.

Pyrgomorphidae

Chrotogonus spp. Members of this genus, especially micropterous specimens are difficult to identify. Specimens from the coast and Lake Victoria (Kilifi, Mnarani, 15-17.v.1992; Sokoke Forest, 24.iii.1992; Lamu, Shela, x.1992; Lake Victoria, Usengi, xi.1992) appear to be *C. hemipterus* Schaum whilst material from northern Kenya and the southern Rift Valley (Lake Magadi, xii. 1992; Olorgasailie, 26.iv.1992; Baragoi, El Barta Plains, 1.xi.1992; Kisimia, near Maralal, 5.xi.1992) appears to be *C. homalodemus* (Blanchard).

Phyteumas purpurascens (Karsch). Masai Mara, vii. 1985; Tigoni Falls, 29.xii.1991. Seen but not collected in the Nairobi National Park and in a field near Peponi Road, Nairobi.

Taphronota calliparea (Schaum). Kakamega Forest, 11.x.1991.

Dictyophorus griseus (Reiche & Fairmaire). Naivasha, Fisherman's Camp, Top Camp, 5.xii.1992.

Parasphena keniensis rehni Kevan. Tigoni Falls, 29.xii.1991 four males, eight females; Gatamayu, 13.ix.1992, one female.

P. naivashensis Kevan. Crater Lake, Naivasha, 22.xii.1991, one male, three nymphs; Eburru (Doiyo Buru), near Naivasha, 6.xii.1992, five males, two females.

P. ngongensis Kevan. Ngong Hills, 19.i.1992. 14 males, five females, one nymph.

P. mauensis Kevan. Kakamega Forest, 7-9.ii.1992, one female. A form with a purple dorsal stripe.

Pyrgomorpha cognata Krauss. Amboseli National Park, 5.xii.1991; Olorgasailie, 26.iv.1992.

Attractomorpha acutipennis (Guerin). Sokoke Forest, Kenya Glass Track, 1.xii.1991; Mnarani Kilifi, 21-24.iii.1992; Jimba, near Kaloleni, 23.iii.1992.

Lentulidae

Usambilla oraria Jago. Sokoke Forest, Jilore Track, 23.iii.1992 & 16.v.1992.

Acrididae: Hemiacridinae

Spathosternum pygmaeum Karsch. Kakamega Forest, 11.x.1991 & 7-9.ii.1992.

Mesopersa filum (Bolivar). Kakamega Forest, 7-9.ii.1992.

Oxyinae

Oxya hyla Serville. Sokoke Forest, Kenya Glass Track, 1.xii.1991, swept from long grass.

Coptacridinae

Parepistaurus felix Kevan. Sokoke Forest, 24.iii.1992, 20.iv.1992, coastal endemic.

P. deses nairobii Green (*in press*). Hurlington, Nairobi, in garden, v.1992; Njukiini Forest, Embu, 5.vii.1992; Thika Falls, xi.1992; Gatamayu, 13.ix.1992; Ololua Forest, Karen, 15.iii.1992, 11.vii.1992, 15.viii.1992, 19.ix.1992. A newly described subspecies with a bright orange-red underside in mature adults.

Paracoptacra ?ascensi Giglio-Tos. A single female with brown markings collected above Lessos at 8000ft, 7.ii.1992, on shrubs in open woodland shows features of *P. ascensi* but to some extent also of *P. cauta*.

P. cauta Karsch. Ololua Forest, Karen, 15.iii.1992; Peponi Road, Nairobi, 19.i.1992; Kakamega Forest, 7-9.ii.1992, Njukiini Forest, Embu, 5.vii.1992.

These grasshoppers have green markings and dwell amongst luxuriant vegetation at forest edges or in light gaps.

Calliptaminae

Acorypha sp. Eburru, 6.xii.1992; Split Crater, Lake Elmenteita, 13.xii.1992.

Euryphyminae

Phymurus granulatus (Uvarov). Eburru, 6.xii.1992. Two males.

Eyrepocnemidinae

Eyrepocnemis plorans (Charpentier). Awasi, Lake Victoria, xi.1992, two females; Kakamega Forest, 7-9.ii.1992, one female. A darkly pigmented, fully-winged *Eyrepocnemis* which appears to be a form of *E. plorans* was collected from several sites in the Naivasha district (Hell's Gate, 1.xi.1991, one male; Crater Lake, 22.xii.1991, one nymph; Split Crater, Lake Elmenteita, 13.xii.1992, one male; Eburru, 6.xii.1992, one male).

Heteracris coerulescens (Stål). Kibarani, Kilifi, 22.iii.1992.

H. brevipennis Bolivar. Hurlingham, Nairobi, iv.1992, in garden; Lavington, Nairobi, v-vi.1991, on garden bean plants; Ol Doinyo Sabuk, 25.i.1992; Ngong Hills, 19.i.1992; Tigoni Falls, 29.xii.1991; Ololua Forest, Karen, 15.iii.1992. Kenya highland endemic.

Oxyaidea poultoni Ramme. Sokoke Forest, Kenya Glass Track, 1.xii.1991, swept from grass; Ngerenya, Kilifi, 21.iii.1992, colony on reeds in dried-up pond.

Taramassus sp. Olekemonge Gorge, Magadi Road, 25.v.1991; Mnarani, Kilifi, 21-24.iii.1992 & 15-17.v.1992; Ololua Forest, Karen, 10.x.1992; Sokoke Forest, Kararacha Track, 18.iv.1992; Sokoke Forest, 24.iii.1992; Lerochi Plateau, Maralal, 31.x.1992; Nairobi, wasteland beside Mbagathi Way, v.1991. This genus is unrevised.

Cataloipus cognatus (Walker). Nairobi, on wasteland between Kenyatta National Hospital and Mbagathi Way, v.1991.

Tylotropidius didymus (Thunberg). Kakamega, in old quarry, 7-9.ii.1992.

Metaxymecus gracilipes (Brancsik). Long-winged examples were found in dry open scrub at the following localities: Magadi Road, 1.ii.1992; Kilifi, Ngerenya, 21.iii.1992; Kilifi, Mnarani, 21-24.iii.1992. The short-winged form, formerly known as *Tylotropidius lanceolatus* Ramme but synonymised with *Metaxymecus gracilipes* by Grunshaw (1995) was found at Kakamega, in a moist clearing next to the Forest Resthouse, 11.x.1991 & 7-9.ii.1992. The two forms appear to have different ecological requirements.

Paraprocticus pendulus (Karsch). Sokoke Forest, 1991-1992; Ololua Forest, Karen, 11.vii.1992 & i.1993; Chania Falls, Thika, 5.vii.1992; Nairobi, Hurlingham, in garden, v.1992.

Catantopinae

Kinangopa jeanneli Uvarov. Gatamayu Forest, 13.ix.1992. The predominantly green males occur on forest herbage in light gaps in company with *Aresceutica vansomerini*. The brown angular females which resemble *Ixalidium* occur in leaf litter nearby.

Ixalidium sp. Sokoke Forest, Kenya Glass Track, 1.xii.1991; Sokoke Forest, Jilore Track, 23.iii.1992 & 16.v.1992; Sokoke Forest, 24.iii.1992; Mnarani Kilifi, 21-24.iii.1992. The genus awaits revision.

Stenocrobylus cervinus Gerstaecker. Kilifi, 20.iv.1992, a male appeared on Land-rover window when driving across Kilifi Bridge.

Pseudophialosphaera severini (Ramme). Sokoke Forest, Kenya Glass Track, 1.xii.1991; Sokoke Forest, Jilore Track, 23.iii.1992; Sokoke Forest, 24.iii.1992.

Aresceutica vansomerni Kevan. Tigoni Falls, 29.xii.1991; Gatamayu Forest, 13.ix.1992; Kieni Forest, 13.ix.1992; Njukiini Forest, Embu, 5.vii.1992.

Brachycatantops emalicus (Kevan). Sokoke Forest, Jilore Track, 20.iv.1992.

Pezacatantops lobipennis (Sjöstedt). Timboroa, 9000ft, 10.x.1991.

P. ngongi (Uvarov). Ngong Hills, 8000ft, 19.i.1992. Endemic to the Ngong Hills.

Auloserpusia phoeniconata Jago. Kakamega Forest, 11.x.1991.

Cerechta bouvieri Bolivar. Sokoke Forest, Kararacha Track, 18.iv.1992.

Pteroperina steini Ramme. Kakamega Forest, 7-9.ii.1992; Saiwa Swamp, 12.x.1991.

Abisares viridipennis (Burmeister). Nairobi, dead on path, Wellcome Trust research laboratories compound, iv.1992.

Cardeniopsis nigropunctatus (Bolivar). Kakamega Forest, abundant in large clearing north of the Forest Resthouse, 7-9.ii.1992.

Diabolocatantops axillaris (Thunberg). Magadi, 1.ii.1992; Kilifi, xi.-xii.1991; Malindi, vii.1985.

Hadrolecocatantops kissanjanicus (Rehn). Kakamega Forest, 7-9.ii.1992.

Epacrocatantops curvicerus (Miller). Nairobi, Kirichwa Kubwa, 1.i.1992; Nairobi, Wellcome Trust research laboratories compound, iv.1992; Tumu Tumu, near Karatina, 26-27.ix.1992.

Cryptocatantops alessandricus (Sjöstedt). Kilifi, Mnarani, 21-24.iii.1992; Sokoke Forest, Kararacha Track, 18.iv.1992; Malindi, Silversands, vii.1985; Sokoke Forest, Jilore Track, 23.iii.1992 & 16.v.1992; Sokoke Forest, 24.iii.1992; Kilifi, Kibarani, 22.iii.1992; Kilifi, xi-xii.1991.

Catantops momboensis Sjöstedt. Hell's Gate, 1.vi.1991; Naivasha, Kongoni, 22.xii.1991; Lake Victoria, Usengi, xi.1992.

Pseudopropacris vana (Karsch). Ololua Forest, Karen, 15.iii.1992; Njukiini Forest, Embu, 5.vii.1992.

Cyrtacanthacridinae

Anacridium melanorhodon (Walker). Lake Magadi, Emarti Oo Lainyamok Plain, 11.x.1992, in thorn scrub; seen but not collected by Magadi golfcourse, 1992.

Cyrtacanthacris tatarica (L.). Nairobi, Wellcome Trust research laboratories compound, iv.1992.

Ornithacris turbida (Walker). Kakamega Forest, 7-9.ii.1992. A huge orange-winged species, of Central African distribution (Mungai, 1987a); scarce in large grassy clearings, such as the old quarry; wary and very difficult to catch.

O. pictula magnifica (Bolivar). These huge purple-winged grasshoppers were found in small numbers at the Split Crater near Lake Elmenteita, 13.xii.1992. When disturbed they fly like birds between scrubs.

Acanthacris deckeni (Gerstaecker). A large pale-green species. Sokoke Forest along the Jilore Track, 16.v.1992.

A. ruficornis (Fab.). Nairobi; Tigoni Falls, 29.xii.1991; Ololua Forest, Karen, xi.1992; Wellcome Trust research laboratories compound, iv.1992. Examples seen high in trees at Kakamega but not collected, may have been *A. ruficornis* or *A. elgonensis* (see Mungai, 1987b).

Localities: 2. Western Kenya

Western Kenya is densely populated but the surviving natural habitat preserves many western elements otherwise unknown in Kenya. Kakamega Forest is the most impressive entomological locality with over three-hundred species of butterfly (Larsen, 1991), including majestic blue *Charaxes tiridates* and *C. bipunctatus*, *Salamis temora* and the endemic *Euphaedra rex*. One may stay at the Forest Resthouse, a basic but perfectly situated building on stilts. An attempt at camping in torrential rain resulted in a tent full of water. Entry to the forest is provided by unsignposted dirt roads which are slippery in wet weather. The roadsides, trails and small tea plantations are colonised by grasshoppers typical of disturbed ground like *Heteropternis coulöniana* and *Morphacris fasciata*. Kakamega *M. fasciata* have yellow wings unlike others I have seen in Kenya with red wings. Light gaps in the forest itself harbour species characteristic of the equatorial forests of Central Africa such as *Spathosternum pygmaeum*, *Auloserpusia phoeniconata*, *Pteroperina steini*, the short-winged form of *Metaxymecus gracilipes* (syn. *Tylotropidius lanceolatus*) and the leaf-like tetrigid *Xerophyllum russisianum* Rehn. At night, an illuminated sheet attracted the common phaneropterine *Phanoptera sparsa* and the beautiful mantid *Phloeomantis* sp. Open areas of grassland at Kakamega are populated by

equatorial grassland species including *Hadrolecocatantops kissanjanicus*, *Gastrimargus mirabilis*, *Mesospersa filum* and *Cardeniopsis nigropunctatus* and more widespread insects like *Gastrimargus africanus*. Outside Kakamega Forest there are other interesting areas of woodland in western Kenya. For instance, at Saiwa Swamp National Park there are strips of forest with *Pteroperina steini* and *Odontomelas kwidschwianus*.

The habitat around Lake Victoria is largely degraded by the dense human population and species typical of disturbed ground occur, such as *Acrotylus patruelis*. On the sandy lakeshore itself, *Calephorus compressicornis* occurs, a very widespread insect found as far north as dunes on the Brittany coast. A feature of gravel road verges in western Kenya is *Acrotylus elgonensis*, occurring at Awasi (4500ft) near Lake Victoria and abundantly in the Western Highlands near Lessos (8000ft) and Timboroa (9000ft). It seems likely that road construction has allowed this insect to extend its range. Also at Timboroa, where a main road provides easy access to highland pasture is *Pezocatantops lobicornis*, a small brachypterous catantopine grasshopper endemic to the Western Highlands.

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Corections to *One and a half years of Kenyan Orthoptera: I. Introduction and Tettigoniidae*. (*Entomologist's Rec. J. Var.* **107**: 277-281)

p. 281. For *Parasphena kinangopa* read *Parasphena keniensis rehni*.

p. 281. The end of the second paragraph should read “. . . *Parasphena naivashensis*, *Phymeurus granulatus*, *Acorypha* sp., . . .”

SOME NOTABLE BUTTERFLY RECORDS FROM GREECE IN 1992 AND 1995

ANDREW WAKEHAM-DAWSON

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DURING TRAVELS IN Greece between 19 July to 3 August 1992 and 3 July to 17 July 1995 (Fig. 1), 114 species of butterflies were seen. As the butterfly fauna of Greece has been well recorded (Gaskin, 1996), only the most notable of these species are listed here. These include species which were rare or less easy to identify. An asterisk (*) next to a species indicates that identification was confirmed by examination of male genitalia. Species are listed in alphabetical order within family groups. Butterflies appeared to be most active between 10.00 and 12.00 hours. The greatest diversities and abundances of butterfly species were found in wet areas, especially near streams in the mountains. Altitudes at which butterflies are recorded on Mount Chelmos in the current list are generally c.200-300 metres lower than the more accurate altitudes estimated for the same areas by Leestmans & Arheilger (1987).

List of species

Papilionidae

Zerynthia cerisyi Stichel. Wet stream valley, Mt Falakro at 600m, a single worn female.

Parnassius apollo L. Mount Olympus, North Pindos Mts. Locally common above 1000m. Females seen in the North Pindos were large and brightly marked with red (f. *rhodopensis* Markovic?).

*P. mnemosyne athene** Stichel. Mt Chelmos, Mount Parnassos. Males and females (unmated and mated with a sphragis) locally common above 1000m in pine forest and sub-alpine pasture. Specimens from North Pindos Mts and Mt Veluchi were larger than those from Mt Chelmos and the chain of white spots in the grey marginal area of the upper forewing was reduced or absent (*mnemosyne mnemosyne* L.).

Pieridae

Colias aurorina heldreichii Staudinger. Males and females locally common on Mt Chelmos, Mt Parnassos and Mt Veluchi (including white females f. *fountaineae*) above 1000m in pine forest and sub-alpine pasture.

Nymphalidae

Boloria graeca graeca Staudinger. Mt Veluchi. Males and females common on stony sub-alpine pasture above 1500m. Specimens from this region were larger and had blacker and brighter orange wing colours than specimens from Mt Falakro (Wakeham-Dawson, 1995). Specimens from Mt Falakro were probably *graeca balcanica* Rebel (van der Poorten, 1982).

Brenthis hecaë D.&S. Mt Falakro, Mt Olympus, North Pindos Mts. A few worn females in meadows above 1000m.

*Mellicta athalia** Rott. North Pindos Mts. A few worn males in a flowery roadside above 1000m.

Satyridae

*Coenonympha rhodopensis** Elwes. Mount Falakro in a pine forest clearing at 1400m, a single male.

Erebia medusa medusa D. & S. Locally common on Mt Olympus, and Mt Falakro in pine forest clearings at 1400m.

E. ottomana bulgarica Drenowski. Common on rocky sub-alpine slopes on Mt Veluchi above 1500m, but only males (very fresh) seen.

*Hipparchia volgensis delattini** Kudrna. Mt Chelmos. A few fresh males and females resting on tree trunks in pine forest at <900m, with wings closed.

*Neohipparchia fatua** Freyer. South Peleponnesos. Locally common at sea level, resting on tree trunks with wings closed.

*Pseudochazara anthelea amalthea** Frivaldsky. Mt Chelmos, Mt Parnassos. Males and females common at c.1000m, flying among pine trees and resting on the ground with wings closed.

*P. graeca graeca** Staudinger. Mt Chelmos. Common above 1300m, but fresh males only, flying close to the ground and resting on rocks with wings closed.

*P. mniszechii tisiphone** Brown (= *cingovskii tisiphone* Brown). Mt Smolikas, barren rocky slopes near pine forests at c.1000m. Five fresh males and one female, feeding on flowers.

Lycaenidae

*Agrodiaetus admetus** Esper. Below 1000m. Mt Chelmos region, Taygetos Mts, Mt Parnassos, Mt Veluchi. Males and females locally common in arid areas and less common in mountain meadows to 1300m, often resting in or beneath scrub bushes during the hottest parts of the day. Specimens fresh.

*A. amanda** Schneider. Mt Chelmos, Mt Olympus, Mt Parnassos, Mt Smolikas. Males and females locally common in mountain meadows to c.1000m. Specimens worn.

*A. aroaniensis** Brown. North Peleponnesos. Males locally common in arid areas, only one female seen. Specimens fresh.

*A. damon** D. & S. Small colony (males only, specimens very fresh) in herb-rich pasture c.1500m, Mt Veluchi.

*A. escheri dalmaticus** Speyer. Mt Falakro, Mt Parnassos, North Pindos Mts. Males and females uncommon in mountain meadows to c.1000m.

A. iphigenia nonacriensis Brown. Despite a close search to 1500m on Mt Chelmos in 1992 and 1995, this species was *not* found.

*A. pelopi** Brown. Taygetos Mts, Mt Chelmos, Mt Parnassos, Mt Veluchi, North Pindos Mts. Males and females very common in hot, arid areas and mountain meadows to 1500m. On a wet day, fresh males and females were observed roosting on mint (*Mentha* sp.?) plants along a ski-road through pine woods at 1500m on Mt Parnassos. The *pelopi* were roosting with their heads downwards and there was generally only one butterfly per plant. In areas below 1000m near Mt Chelmos, *pelopi*, *admetus* and *aroaniensis* were observed flying together.

*A. thersites** Cantener. Widespread and common at low level.

Aricia anteros Freyer. Mt Veluchi. A single male in herb-rich pasture at c.1500m.

*A. artaxerxes allous** Geyer. Parnon Mts where the species was uncommon in dry, rocky meadows at c.1000m. Mount Veluchi where the species was common in meadows above 1500m. Orange markings were completely absent from the upper surfaces of the forewings in males and females from both areas.

Heodes ottomanus Lefebvre. One male by a stream below 1000m near Kalavryta and one male near a stream at 1300m on Mount Chelmos.

Iolana iolas Ochsenheimer. Mt Parnassos, larvae in seedpods of *Colutea arborescens* L.

*Lycaeides idas idas** L. Mt Parnassos. A single male in sub-alpine pasture above 1500m.

*L. idas magnagraeca** Verity. Mt Olympus, North Pindos Mts in grassy areas at c.1000m. Genitalia similar to *idas idas*, but wings larger and more purple with broader black margins. Common. The *idas* recorded from north-east Greece (Wakeham-Dawson, 1995) were *idas magnagraeca*.

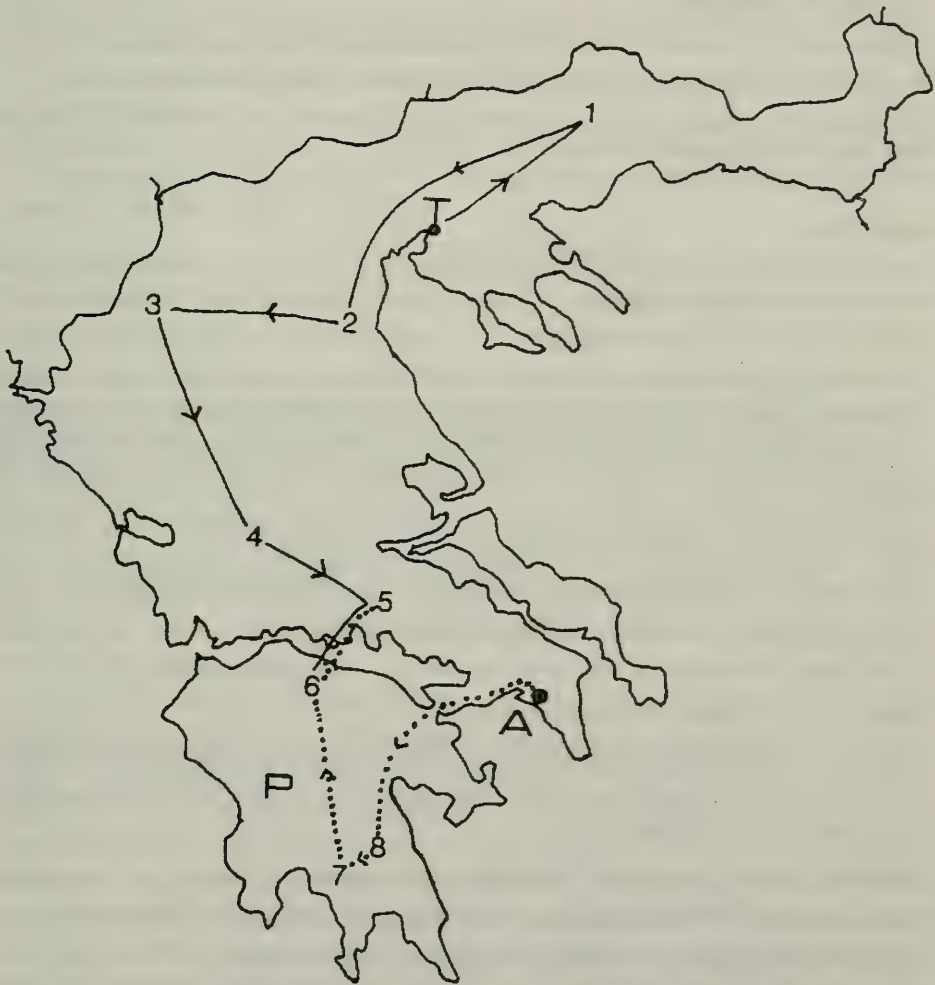


Fig. 1. Areas surveyed for butterflies in Greece in July 1992 (dotted line shows route of travel) and July 1995 (solid line shows route of travel).

A, Athens; P, Peloponnese; T, Thessalonika.

1. Mount Falakro; 2. Mt Olympus; 3. North Pindos Mts (inc. Mt Smolikis); 4. Mt Veluchi (= Mt Timphristos); 5. Mt Parnassos; 6. Mt Chelmos (Aroanian Mts), 7. Taygetos Mts; 8. Parnon Mts.

Lycaena dispar rutila Werneburg. A single worn male (probably first brood), wet stream valley, Mt Falakro at 600m. Fresh second brood specimens of this species were found in the same location in late July 1994 (Wakeham-Dawson, 1995).

Lysandra bellargus Rott. Mt Chelmos, a few males c.1000m.

L. coridon Poda. Mt Parnassos, a single male c.1000m.

Maculinea arion L. Wet stream valley, Mt Falakro at 600m, a single male.

*Plebejus argus** L. Mt Chelmos, Mt Falakro, Mt Veluchi. Locally very common, especially at higher altitudes.

*P. pylaon brethertoni** Brown. Mt Chelmos, Mt Veluchi. Locally common above 1000m in mountain meadows.

Polyommatus eros menelaos Brown. Mt Chelmos, a single male at c.1300m.

Pseudophilotes bavius casimiri Hemming. Mt Chelmos, a single female at 1300m.

Thersamonia thersamon Esper. A single female by a stream near Kalavryta (c.750m) at the base of Mt Chelmos.

Hesperiidae

These species were generally found in grassy areas and were easy to overlook because of their small size and rapid flight.

*Carcharodus alceae** Esper. Widespread.

*C. orientalis** Reverdin. Mt Chelmos, Mt Veluchi. Locally common c.1000m. Specimens found on these two mountains were much browner than grey specimens from north-east Greece in May (Wakeham-Dawson, 1996). The browner July specimens were superficially similar to *C. lavatherae* Esper on the uppersides of the wings.

*C. focciferus** Zeller. North Pindos Mts. A single male c.1000m.

Erynnis tages L. Mt Chelmos region, North Pindos Mts. Widespread and common.

*Pyrgus armoricanus** Oberthur. Widespread and common.

P. sidae Esper. North Pindos Mts. A few specimens c1000m, very worn.

*Spialia orbifer** Hübner. Mt Parnassos. Common.

*S. phlomidis** Herrich-Schäffer. Mt Chelmos, North Pindos Mts. Common above 1000m.

*Syrichtus proto** Ochsenheimer. Mt Chelmos region, Parnon Mts, Taygetos Mts. Common between 700 and 1500m.

*Thymelicus acteon** Rott. North Pindos Mts, a single male c.1000m.

T. sylvestris Poda. Mt Chelmos region, North Pindos Mts, Mt Veluchi. Widespread.

T. lineola Ochsenheimer. Mt Veluchi. A single male above 1000m.

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The arrival of *Phyllonorycter platani* and *P. leucographella* (Lep.: Gracillariidae) in Reading

I have been looking out for *Phyllonorycter platani* (Stgdr.) and for *Phyllonorycter leucographella* (Zell.) in my local area since finding mines of the former in London Plane *Platanus x hispanica*, at the annual exhibition of the British Entomological and Natural History Society at South Kensington, London on 22 October 1994, and of the latter in firethorn *Pyracantha* sp. in my parents' garden at Wickford in Essex on 22 April 1989 (about two weeks after its discovery in this area by M. Emmet, although for some time I believed the moths I reared from these pod-like mines to be unusual varieties of *P. corylifoliella* (Hb.)).

At a field meeting I led at Ashley Hill Forest, Knowl Hill near Maidenhead, Berkshire on 27 October 1996 I heard rumour that both these species had been seen that year in the Reading area. Subsequently I discovered the unmistakable mines of *P. platani* in plane leaves on sapling trees outside the main train station in Reading on 5 January 1997. One leaf contained four mines, a second contained two. On arriving back at my house on the same day I noticed the characteristic early mines of *P. leucographella* over the mid-rib of three firethorn leaves on a bush growing at the end of my road. Since then, the number of mined leaves on this bush has increased to 15, despite the bush having been pruned by its owners in February. This exercise removed two of the three leaves noted as mined on 5 January.

I also noted mines of *P. platani* in plane leaves lying in the High Street of Marlow, Buckinghamshire on 14 December 1996, but have not seen evidence of this species yet in Henley-on-Thames, Oxfordshire (10 March 1997), despite looking for it.— I. SIMS, 2 The Delph, Lower Earley, Reading, Berkshire RG6 3AN.

Beetles in Toad Faeces

A large toad *Bufo bufo* L. resided for the whole of the summer of 1993 under a flat metal sheet lying on the surface of a vegetable garden in Blackford, Edinburgh (O.S. Grid reference NT2571, VC83). Prior to moving to hibernation quarters in October 1993 this toad produced a single large faecal stool. After rearing some sphaerocerid flies from the stool (Bland, K.P., 1995, *Dipterists Digest* 2 (second series):12), the insect remains in the faecal material were studied. Some indication of the prehibernation binge indulged in by this toad can be gathered from the following list of insect remains:

COLEOPTERA

Carabidae

Leistus fulvibarbis Dejean – 1 pronotum, 1 right elytron

Nebria brevicollis (Fabricius) or *N. salina* Fairmaire & Laboulbene – 1 pronotum, 1 elytron, 1 abdomen

Agonum dorsale (Pontoppidan) – 1 elytron

Staphylinidae

Philonthus decorus (Gravenhorst) – a few abdominal sclerites.

?*Staphylinus brunnipes* Fabricius – 1 elytron

S. globulifer Fourcroy – 5 heads, 3 right & 5 left elytra, 8 pronota

S. olens Müller, O.F. – 7 heads, 9 right & 9 left elytra, 8 pronota, 2 aedeagi

?*Creophilus maxillosus* (Linnaeus) – one abdominal sclerite

Quedius tristis (Gravenhorst) – 2 heads, 9 elytra, 1 aedeagus

Also numerous bits and pieces of one or more small/medium-sized species of ?*Quedius*, but it was not possible to be more precise.

Curculionidae

Otiorhynchus singularis (Linnaeus) – 1 pronotum, 1 elytron, 1 abdomen

Phyllobius sp. – 1 head

Also numerous unidentifiable fragments of assorted thoracic appendages of coleopterous origin.

DIPTERA

2 heads of unidentified species.

The nine large Devil's Coach-horses *Staphylinus olens* must have accounted for 30-40% of the bulk of the insect food that was eaten to produce the faecal material from which these remains were taken. The poor toad must have had some intestinal discomfort passing such a substantial faecal stool. In total fragments were present of a minimum of 33 insects. All the species recorded are quite common, although *Leistus fulvibarbis* is less common than the others. – K.P. BLAND, National Museums of Scotland, Chambers Street, Edinburgh EH1 1JF and M. SINCLAIR, Gipnigoe, Main Street, Denholm, Roxbs. TD9 8NU.

OCCURRENCE OF POLLINATOR BEES IN LEH: LADAKH (JAMMU & KASHMIR) AT 3430 METRES (11,200 FEET) ALTITUDE IN INDIA

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OUT OF 19,000 species of wild bee in the world (Linsley, 1958) only two, the leaf-cutting bee *Megachile rotunda* Fabr. (Bohrat, 1972; Johanson & Mayer, 1976) and the Alkali Bee *Nomia melanderi* Cockerell (Johanson & Eves, 1973) are manipulated and used in crop pollination.

During the survey and collection of insects at high altitude in the north-west Himalayas, two hymenopterous insects, *Andrena peregrina* Smith (Andrenidae) and a *Colletes* species (Colletidae) were collected from flowers of mustard, lai, radish, turnip, knol-khol, carrot and onion in the Leh: Ladakh region, Jammu & Kashmir, at 3430 metres (11,200 feet) altitude from the last week of July to mid-August during 1992. The population of *A. peregrina* dominated in all crop types, in comparison with the unknown *Colletes*. However, the average population of *A. peregrina* on each crop was low, with a high of ten on mustard followed by eight on carrots (Table 1).

The pollen collected by *A. peregrina* and held in the pollen-baskets on the hind tibiae appeared as a yellowish-white ball approximately 4mm in diameter. The bees in the present study were observed actively pollinating the crops in these high altitude areas. Rashad and Moneim (1983) have reported two species, *Andrena savignii* and *A. fucosa* pollinating a broad bean crop in Egypt and Kapil and Jain (1983) list *A. ilerda*, *A. leana*, *A. carantonica* and *A. candida* on a variety of different vegetable crops and in

Table 1: Populations of *Andrena peregrina* and the unknown *Colletes* species on different crops in Leh: Ladakh, India in 1992

| Crop | Numbers of bees per plant recorded | |
|---|------------------------------------|---------------------|
| | <i>Andrena peregrina</i> | <i>Colletes</i> sp. |
| Mustard <i>Brassica campestris</i> L. | 10 | 3 |
| Lai <i>B. juncea</i> L. | 3 | 1 |
| Radish <i>Raphnus sativus</i> L. | 4 | 2 |
| Turnip <i>B. rapa</i> L. | 5 | 3 |
| Knol-khol <i>B. oleracea</i> var. <i>gongylodes</i> | 4 | 3 |
| Carrot <i>Daucus carota</i> L. | 8 | 4 |
| Onion <i>Allium cepa</i> L. | 6 | 3 |

orchards. From the available literature, this present report of *A. peregrina* appears to be the first from Leh: Ladakh since it was collected at Yangihissar on the second Yarkand Mission (Donald Baker, *pers. comm.*).

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Hazards of butterfly collecting – Christian Cat goes camping, Botswana 1991

It was to be our joint swan-song expedition in Botswana, to the Tswapong Hills, one of the finest collecting spots in the country. There are probably at least 125 butterfly species in the area – not much by rainforest standards, but a lot by the semi-desert conditions of Botswana (1992, Butterfly collecting in the Tswapong Hills, Botswana. *Metamorphosis* **3**: 18-20). The well-wooded hills are very beautiful, and no-one else is around.

We loaded up the Toyota Hilux at dawn. There is no need to travel light if you do not have to, and Nancy likes a few creature comforts when camping. I think I have previously mentioned that we carry chopsticks on camping trips – just in case we get the fancy for crab with straw-mushrooms and glass noodles. We also carry a wok.

As usual our cat, Christian – the only survivor of Christian, Frederick and Margrethe, named after the Danish royal lineage – participated enthusiastically in the preparations. He loved poking about the car. He hated driving in it, though. Once, when taking him to the vet, he escaped through a slit in the window that seemed too narrow for a spider. We got him back only four hours later after distributing a generous amount of Pula notes to all the kids in the neighbourhood. He was found hiding deep under a pile of bricks at a building site. It took a long time to coax him out, and several additional Pula to the finder.

Off we went at 06.00 for the four hour drive. We stopped just before the destination to have a rest. We opened the back of the Hilux to get a cold drink and heard a curious, tentative squeak. Rats among food stocks? No . . . a bedraggled and shell-shocked Christian Cat was found . . . in need of serious comforting. We had a drink. Christian Cat had a snack. He spent the rest of the drive draped across Nancy's lap, the claws of all four paws firmly embedded in her thighs.



Nancy and Christian Cat at camp.

We had to leave the cat inside the car while collecting for the rest of the day – not to his liking. At 15.30 we found a good campsite and set up camp with well-honed skills. Christian Cat promptly disappeared. We began to be worried, but it turned out he was just “casing the joint”, systematically exploring – and perhaps even marking – his new territory.

Christian had a share of the *boerwurst* (made by Boers, not from Boers) we were going to grill for dinner and seemed content and secure. We had an excellent dinner (grilled *boerwurst*, potatoes baked in the campfire, salad, and excellent South African plonk). What to do with the cat? We had designs of spending the night in the tent engaging in activities with which a cat would only interfere. But the cat went absolutely spare when locked up in the car, careering so fast that literally hit the roof. We decided that it would be safe to leave him in the open. After all, he had already cased the joint. Just after reaching this comfortable conclusion, all hell broke loose. A pack of hyenas went off in a chorus of laughter all around the camp. Sorry Christian . . . into the cab you go. A city cat would make a nice hyena snack.

We could hear him whirling around the cab of the car while we implemented our original designs.

Over the next few days we caught several very interesting butterflies that were not yet seen before. We were at the end of a series of quite wet years by Botswana standards – following a protracted drought – and it seems that many species were gradually moving back into Botswana from the Transvaal. Doubtless this kind of retrenchment and expansion are a regular feature in very arid zones.

We changed campsite and it was fascinating to see Christian Cat casing the joint once again, in a most methodical manner. They may have been human companions for millenia, but some of their original territorial behaviour survives. It was rather less fascinating bringing him back to Gaborone. Nancy did not have the heart to relegate him to the back of the Hilux. He was draped over her lap for the four-hour journey, all four sets of claws again embedded in Nancy's thighs, never looking out. There was the occasional low moan from both of them. I kept my foot on the accelerator till we reached home.

We opened the front door of the house and started lugging in the gear. We found Christian in his usual place – in front of the fridge staring intently at the door – that great white deity in which the catfood lives. Christian Cat was back home!– TORBEN B. LARSEN, 258 Coldharbour Lane, London SW9 8PL.



Commemorative March flight of the Horse Chestnut Moth for Colin Smith

On 15 March 1997 the ashes of Professor Colin Smith were scattered by his wife Ruth and family on a Sussex heath, so returning Colin to his county of birth.

Towards the end of this little ceremony a pale moth, that was too large for most micros and rather long-winged, flew up from the heather. Whilst working nearby for larvae afterwards, I caught and identified a number of similar moths which were the Horse Chestnut *Pachycnemia hippocastanaria* Steph., the exceptionally early date of emergence being due doubtless to the long spell of unusually warm spring temperatures with sunshine, rather than as a tribute to Colin, nice though that thought is; Barrett, *Lepidoptera of the British Islands* 7: 251 (how very thorough the Victorians were with full original text), remarks that this moth will fly in March in forward seasons.

The *Calluna* was a sorry sight, showing die-back and desiccation following drought but the *Erica* was by contrast green and healthy with abundant seedling regeneration. Larvae disturbed from *Erica* and *Calluna*

included third instar *Noctua comes* mostly parasitised by *Aleiodes* spp., small *Xestia agathina*, and a tiny *Noctua fimbriata* both also attacked by *Aleiodes* spp., a small *Campaea margaritata* and *Alcis repandata* definitely from *Calluna*, a half-grown *Dyscia fagaria* and a pupa of *Thera obeliscata* amongst *Erica* beneath pine.

Colin Smith will be better known to academia for his outstanding literary achievements associated with his renowned work in promoting better understanding of the Spanish language and literature in which he became a recognised authority of Spanish medieval epic. His *Collins Spanish Directory* is widely acclaimed. He held the Chair of Spanish at St. Catherine's, Cambridge from 1975 to 1990 and pursued a busy life that took him worldwide; a measure of the global esteem in which he is held is a planned two-day conference in his honour. His appointment in 1988 by the Spanish Crown as Commander on the Order of Isabel la Catolica is an outstanding honour and testimony to his eminence.

He reached fame amongst lepidopterists by his discovery of the Southern Chestnut moth *Agrochola haematidea* Dup. in Britain. He was urged at that time to accept the name of Smith's Chestnut for the moth and when he modestly rejected that, then the Sussex Chestnut was also suggested to him, but his better instincts were to adopt a name that not only fixed the species firmly as an inhabitant of the south of Britain, but also recognised that it had, until found in Sussex by Colin, a decidedly southern European distribution. Few of life's achievements are so deliciously rewarding that a moth best known from Spain should be found so far northwards by a Professor of Spanish and lover of all things Hispanic.— GERRY HAGGETT, Meadows End, Northacre, Caston, Norfolk NR17 1DG.

Further records of scarce Tachinidae (Diptera) from Brent Reservoir (Middlesex) and corrections to a previous note on *Thecocarcelia acutangulata* (Macquart)

These records supplement a previous note on scarce Tachinidae at Brent Reservoir (Dobson, 1996. Some nationally rare Tachinidae (Diptera) from Brent Reservoir including the second British record of *Thecocarcelia acutangulata* (Macquart). *Ent. Rec.* **108**: 308-310).

Subclytia rotundiventris (Fallén), 17 August 1995, from the west end of the carr woodland on the south bank of the East SSSI, TQ2187. A small but distinctive species, a female was found "sunning" on a bramble leaf alongside a path at this location. It is a parasitoid of certain Shield Bugs of the families Acanthosomatidae and Pentatomidae, and there are UK rearing records of this species from two members of the former family (Belshaw, 1993. Tachnid Flies. Diptera: Tachinidae. *Handbooks for the Identification*

of *British Insects*. Royal Entomological Society of London. **10** 4a (i)). The same author cites 14 UK records of this Rare (RDB 3) species from a variety of habitats, mainly in south England.

In my previous note (Dobson, *op. cit.*) I gave one record of *Wagneria gagatea* R.-D. from Brent Reservoir. I now have an additional record of this Rare (RDB 3) Tachinid fly from a different area of the same site: two males, 5 June 1996, East SSSI, TQ2187. It is of interest that a male of this species was also recorded from a garden in the area (c. 7km from Brent Reservoir), adjacent to Coppetts Wood LNR, Barnet by K.G.V. Smith (1996. *Wagneria gagatea* R.-D. (Dipt.: Tachinidae) in north London (Middlesex). *Entomologist's Monthly Magazine*, **132**: 176) on 25 May 1995, three days before I first found it at Brent Reservoir. The only UK rearing record is from The Chestnut *Conistra vaccinii* (L.), a moth which is widespread in the London area and associated here with *Salix* spp. (Plant, C.W., 1993. *Larger moths of the London area*. London Natural History Society). Continental rearing records (from a small number of species of Lepidoptera) and the distribution of this fly in the UK are discussed by Belshaw (*op. cit.*) and Smith (*op. cit.*).

It is unfortunate that two errors occurred in my note on *Thecocarcelia acutangulata* in this journal (Dobson, *op. cit.*). In the first instance, the correct date of capture for this specimen is 3 September 1994 (not 3 October 1994 as cited). I would like to apologise to anyone who is inconvenienced by my mistake. In the second place a "printer's devil" lost 15 words, splicing the beginning of one sentence with the end of the next. This occurs two-thirds of the way down page 309 and should read as follows:

"Reared specimens of *T. acutangulata* in the Natural History Museum are all Afrotropical and are associated with five species of hesperiid host (N. Wyatt, *pers. comm.*). In addition there is an Austrian rearing record of this species (as *Thecocarcelia incendens* (Rondani)) from *Thymelicus lineola* Ochs., the Essex Skipper butterfly (which occurs at Brent Reservoir) (Carl, K.P., 1968. *Thymelicus lineola* (Lepidoptera: Hesperiidae) and its parasites in Europe. *The Canadian Entomologist* **100**(8): 785-801)."

— JOHN R. DOBSON, 46 Elmwood Avenue, Kenton, Harrow, Middlesex HA3 8AH.

Some notes on Lepidoptera in Surrey, 1994-6

Phyllonorycter leucographella Zell. is a species that has been rapidly extending its range since first being recorded in Britain in 1989. The first time I encountered this species was on a visit to Surrey in October 1995 when I found dozens of mines on a *Pyracantha* bush in Caterham - TQ331540.

On Box Hill, TQ181515, in June of the same year a single larva was found under a web on the upperside of a leaf of wild privet *Ligustrum vulgare*, which, when bred proved to be *Zelleria hepariella* Stt. This appears to be a new foodplant for the species in Britain; *Fraxinus* is the only foodplant mentioned by Emmet (1991, in *The Moths and Butterflies of Great Britain and Ireland* 7(2) Harley Books).

Pediasia contaminella Hb. is a species I have mostly encountered on the coast in Kent and Hampshire, although Goater (1996, *British Pyralid Moths*, Harley Books) gives Middlesex and Hertfordshire as inland counties. I identified this species from Caterham TQ331540 first in vii.1994, and again on 28.vii and 1.viii.1996. Whether this represents its recent arrival in the area or whether it had previously been overlooked is uncertain. At the same locality, between 27.vii and 1.viii.1996 a single *Idaea vulpinaria atrosignaria* Lempke, and four specimens of *Parascotia fuliginaria* Linn. were taken at m.v. Although both species are well known from Surrey (e.g. Skinner, 1984. *Colour Identification guide to the Moths of the British Isles*, Viking), I had encountered neither in over 30 years acquaintance with the Lepidoptera of the eastern border of Surrey.

Finally, also at TQ331540, a large moth sitting on a tree trunk on the night of the 20.x.1995 proved to be a male *Mormo maura* Linn. in reasonable condition and a very unusual date for this species.— ROBERT M. PALMER, Greenburn Cottage, Bucksburn, Aberdeen AB21 9UA.

An early spring sighting of the Camberwell Beauty *Nymphalis antiopa* Linn. (Lep.: Nymphalidae) in Northumberland

Walking east of Morpeth along the northern bank of the River Wansbeck on 8 March 1977 my wife and I observed (and photographed) a Camberwell Beauty butterfly initially sunning itself on a fallen tree trunk and subsequently on the ground leaf litter, over a period of twenty minutes. The location (at grid reference NZ219859) was an open, sunny, but sheltered, area between the river and mixed woodland, which includes mature larch trees. Afterwards it flew off amongst the trees and was not seen again.

The butterfly was in good condition with only a few minor tears at the margins of the hindwings. The pair of subtriangular blotches on each forewing together with the borders of the wings, which are all usually cream coloured, were white.

Most sporadic sightings of the Camberwell Beauty have been in late summer (Chalmers-Hunt, 1977, *Ent. Rec.* 89: 89-105; Pittman, 1995, *Ent. Rec.* 107: 309-310) with spring sightings accounting for only about ten per cent (Bretherton & Emmet, 1989, In: *The Moths and Butterflies of Great*

Britain and Ireland. Vol. 7(1). Harley Books). The present sighting so early in March is strongly suggestive that the butterfly was a 1996 immigrant which had then hibernated somewhere locally over winter. The whitening of the wing borders is consistent with this view.

One can only speculate about the origin of this butterfly. It was observed inland at about 8.7km (as the crow flies) from the North Sea coast. Possibly it crossed the North Sea in the summer or autumn of 1996 and then moved inland following the course of the valley of the River Wansbeck to reach a suitable place in which to hibernate. In the past it has been suggested (Newman, 1955, *The Entomologist*, **88**: 25-27) that the Camberwell Beauty is not a natural immigrant but enters the United Kingdom with imported timber from Scandinavia. Interestingly, there is a sawmill and joinery situated about 1.7km downstream towards Bothal. The results of my enquiries here have been inconclusive. Although the larch logs stacked at the sawmill are home grown, in addition so-called "sawn-joinery" wood is utilised for the construction of sheds and this comes from a wholesale distributor located on the Tyne Dock, South Shields, which, in turn, imports the seasoned and sawn timber from Sweden, Finland and Latvia!

— HEWETT A. ELLIS, 16 Southlands, Tynemouth North Shields NE30 2QS.

The occurrence of *Apomyelois bistriatella* (Hulst) ssp. *neophanes* (Durrant) (Lep.: Pyralidae) in Yorkshire with a comment on its flight period.

On the evening of 3 September 1996 in the company of Mr Tony Ezard I visited Skipwith Common, near Selby (VC61) where we operated two m.v. lights in an area dominated by heather and birch. During the course of the evening a very worn brown pyralid moth came to my sheet which, at the time, I suspected would turn out to be *Metriostola betulae* (Goeze). Fortunately my recollection was that recent records of that species in VC61 were very few and so I retained the specimen for verification. It was not until the end of February 1997 that I got round to having another look at the moth, which was a male. An examination of the genitalia showed it to be *Apomyelois bistriatella* (Hulst).

This species has not previously been recorded from any of the five Yorkshire vice-counties. Goater (1986, *British Pyralid moths*) gives the most northerly British locality as Whixall Moss in Shropshire.

The date of capture of my moth appeared to be very late as the standard sources of information (Goater, *op. cit.*; Emmet, 1988, *A Field Guide to the smaller British Lepidoptera*; Parsons, 1993, *A review of the scarce and threatened pyralid moths of Great Britain*) are unanimous in giving the flight

period of this species as being June and July. However, Palm (1986, *Nordeuropas Pyralider*) gives the flight period in Denmark as “mid-June through August” with a spread of dates ranging from 11 June to 6 September. In fact, despite the information regarding the flight period given in Goater (*op. cit*) the same author (1974, *The Butterflies and Moths of Hampshire and Isle of Wight*) lists records of *bistriatella* at Southampton on 22 August 1968 and at Browdown on 17 September 1966 and 23 August 1968.

The worn state of the moth recorded at Skipwith Common on 3 September is more indicative of it being a late emerging example of a single prolonged generation than belonging to a partial second generation. It is suggested therefore that the flight period of this species in Britain be amended to “June-August”.— H.W. BEAUMONT, 37 Melton Green, West Melton, Rotherham, South Yorkshire S63 6AA.

BOOK REVIEWS

The butterflies and moths of Lincolnshire – The micro-moths and species review to 1996 by Rex Johnson. 85pp. A4, softback. ISBN 0 948005 07 62. Lincolnshire Naturalists' Union. £14.95. Available from the author at 23 Church Street, Messingham, North Lincolnshire DN17 3SB.

Rex Johnson was co-author, with the late Joe Duddington, of *The butterflies and larger moths of Lincolnshire and South Humberside* which was published by the Lincolnshire Naturalists' Union in 1983. Since that work the number of active moth trappers and observers in Lincolnshire has grown substantially, considerably encouraged by Rex and his enthusiasm as County Moth Recorder, and communications between lepidopterists have greatly improved. About sixty observers are now supplying information to Rex on an annual basis. Consequently coverage of the county is better than ever before and many important records have been up-dated. The book under review here marshalls this new information and adds it to what was already known about the moths in Lincolnshire in a comprehensive and most accessible annotated list.

The book is very much a supplement to the earlier volume. It does not repeat the chapters on the geology, habitats, recording and conservation work in the county. After a brief introduction to developments since 1983, and a reference list and key, we go straight to the list of moths, which is the bulk of the book. The list sets out to include every species recorded in Lincolnshire (vice-counties 53 & 54) from the earliest work in the nineteenth century up to the middle of 1996. The list includes the microlepidoptera, which were not covered by the earlier book, though they were included in the first county list for Lincolnshire, which was published in parts by G.W. Mason via the LNU between 1905 and 1918.

The list follows the order, numbering and scientific names used by Bradley and Fletcher (1979) with some of the subsequent amendments by Bradley and Fletcher (1986) and Emmet (1991).

The list is tabulated very clearly in a series of columns and the format for each species is as follows:

Bradley and Fletcher number; *Heslop number* (as used in the 1983 book); *Scientific name*; *Vernacular English name* for butterflies and macro-moths (for the microlepidoptera this column is used to give the scientific name used by Mason, Maitland Emmet having given Rex considerable help in deciphering and cross-referencing this section); *National Status*, following the various National Reviews published by the Nature Conservancy Council and the Joint Nature Conservation Committee; *Presence in vice-county* – four columns are given, showing whether there is a record for the species from each of the two vice-counties for the period up to 1918 (Mason's list) and for the period from 1918 to the present, and finally *Comments*. For species with only one or two records or sites, the site name, date of record and initials of the recorder are given, otherwise a more general statement on the habitats occupied and/or frequency of records is provided.

There is also an additional table for the macro-moths, which covers the period from 1986 to 1995 and shows in which of these years each species has been recorded in Lincolnshire, by shading of the relevant column. This serves to highlight which species have not been seen for a while, which will stimulate special searches to update the records or to explore other localities to find the moth. Species recorded in Lincolnshire but not seen since before 1986 are included in this table, with a note of the last record and this really helps to identify species in need of special searches.

The book concludes with a list of contributors and an index of scientific and vernacular names. The cover is a striking pink, the colour of the petals of an *Aubretia* flower photographed by Roger Key, with the common pyralid moth *Pyrausta aurata* taking nectar at the centre. Rex is to be congratulated on collating a vast amount of data into such an accessible and useful form. This book will help anyone recording Lepidoptera in Lincolnshire to put their own lists into context, it will help make the Lepidoptera even more useful in site evaluation, and it shows us which species we must make a special effort to track down. I thoroughly recommend the book and hope that a similar approach will be adopted in other counties, whether or not they already have full published county lists or not.

Paul Waring

A Systematic Catalogue of the Zygaeninae (Lepidoptera: Zygaenidae)
by A Hofmann & W.G. Tremewan. Harley Books, 1996. ISBN 0 946589
57 7. £42.50 nett.

In 1988, W.G. Tremewan's volume on Burnets, *A Bibliography of the Zygaeninae (Lepidoptera: Zygaenidae)* was published. The current volume

by him and his co-author Axel Hofmann is very much a companion volume but also complete in its own right. Entomologists with deep interest in the Zygaeninae will find this an essential tool for researching this family quickly and simply, and it contains much of the authors' own original research.

The content beyond the Introduction goes straight into the Systematics, which anyone with experience of working on families of insects and their synonymy will appreciate as being a major headache. This has been especially true of Burnets in the past and the authors have set out to simplify their study in this volume by the use of clearly explained ground rules for specific and subspecific level. Those with an interest in the status of the biological species in insects will find this section of considerable interest. There follows a Check-list of the 116 currently recognised species, though the main body of the work, the Systematic Catalogue, in 159 pages, covers the family at species and subspecies level, with reference to original descriptions, host-plants, distribution range, synonyms and other additional material selected as of interest since the publication of the *Systematic Catalogue of the genus Zygaena* (Reiss & Tremewan, 1967).

The very significant reduction in the number of subspecies attributed to some species in the past is of note and importance. The authors point out that recent thinking on the definition of a subspecies has led to, in the case of *Z. purpuralis*, a reduction from 79 to 18 subspecies in this catalogue and subsequently justifies the 20 pages of index for only 116 species and synonyms!

The Catalogue of Zygaeninae section is followed by a 135 page supplement to the 1988 Bibliography and lists omissions to that work and also updates it to the end of 1995, and in some cases, into 1996.

An Index of host-plants follows, and the work concludes with an index to family, generic, subgeneric, specific and subspecific references.

Two points might add to this volume. The reviewer firmly believes that fine new books need protecting from dirt and wear and especially sunlight that can be quite destructive to a book's spine. However, this volume, like its companion, lacks a dust wrapper. Secondly, a companion CD to this volume and the Bibliography would speed searching for obscure references enormously, probably at relatively little extra cost.

Altogether a most useful work, very well produced, set in typefaces that are easy and pleasurable to read, the book is put together in a form that is easy to use. J.W. Tutt, who was deeply interested in this family, would certainly have approved of this volume!

The publishers are offering this Catalogue together with the companion Bibliography at a special price of £60.

David Wilson

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AND JOURNAL OF VARIATION

(Founded by J.W. TUTT on 15th April 1890)

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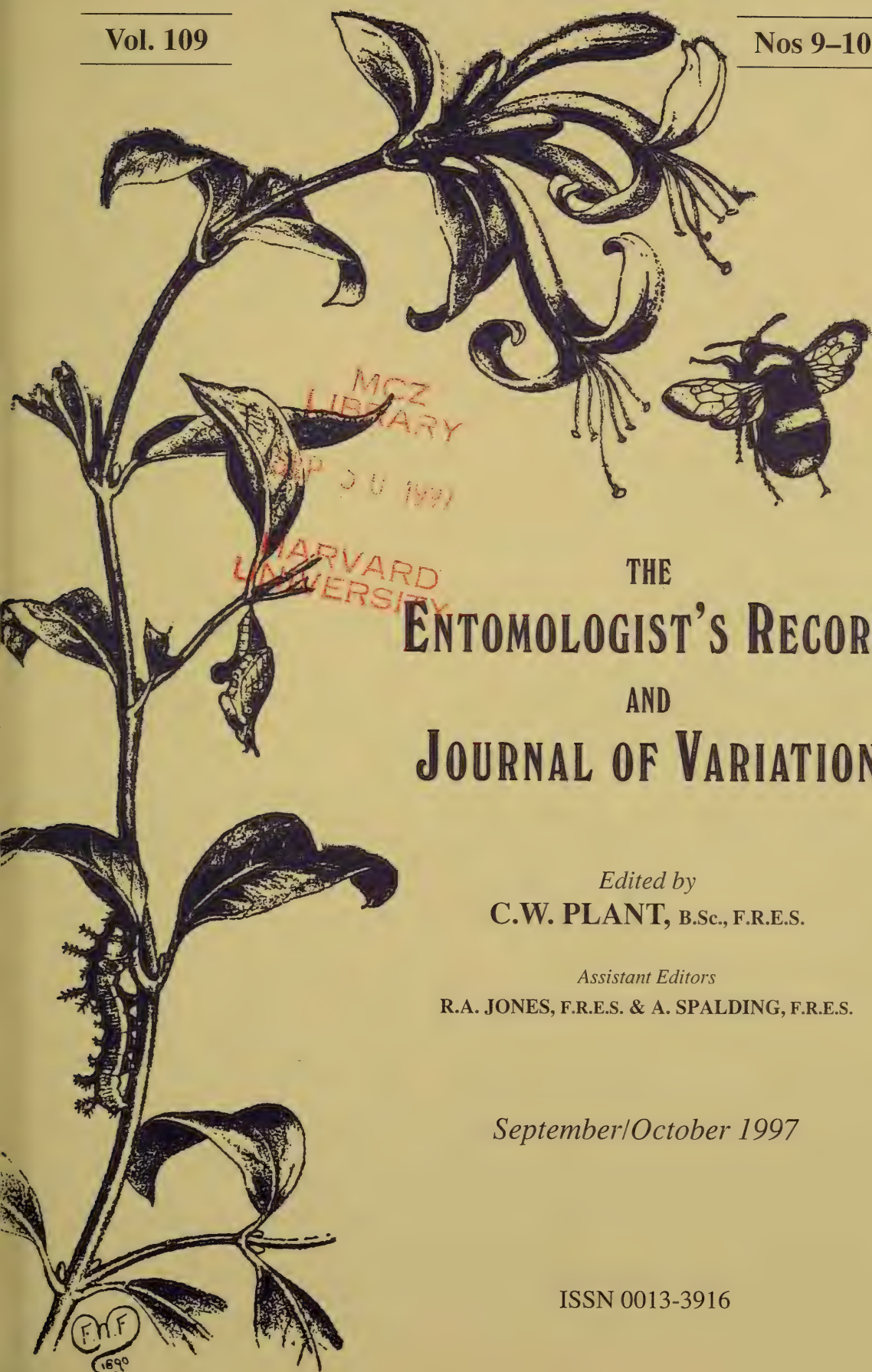
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Manuscripts should be typed or neatly hand-written on one side of the paper only and **must be double-spaced**. Long papers that are not double-spaced and which require a lot of marking-up may be returned to the author for re-typing. Pages should be numbered (by hand is adequate). **Two copies of all papers are required**; two copies of notes are highly desirable. The second copy may be a photocopy or carbon copy. Please do not use bold, italic or compressed typefaces; **scientific names (but not their authorities) should be underlined**. No other text should be underlined. References given in notes should be typed with the text and may be abbreviated (*eg Ent. Rec.*); references given in papers should be gathered at the end of the paper and should follow the standard *World List* abbreviations (*eg Entomologist's Rec. J. Var.*). Sub-headings within papers, such as "**Methods**", "**References**" etc., should have an initial capital and be centred on the line. Titles of papers should be typed in capitals and centred; titles of notes should be in lower case and set to the left margin. The first paragraph of text should be set to the left margin; subsequent paragraphs should have the first line indented. Dates should follow the format of day, in Arabic numerals, then month, either spelled out in full or in Roman numerals, then year, in full (*eg 25 December 1995 or 25.xii.1995*). Measurements should be in metric units and should follow the SI system (*Système International d'Unité*), with imperial equivalents in brackets thereafter if required.

When both common and scientific names of species appear together there should be no brackets or commas separating them. **Genus names must appear in full when first cited** (*eg in the title*). Authorities should be given for all genera, specific epithets and binomials at their first citation, correctly abbreviated where possible, and attention should be paid to the correct usage of brackets around such authorities. Titles of papers and notes containing species names should also include the Order and Family to which the species belongs in brackets to facilitate indexing.

The first copy of all illustrations must be the original; captions should be typed on a separate page. Photographs should be glossy, positive prints with good definition and will be reproduced in monochrome. Colour photographs may be reproduced only after prior discussion with the Editor. **Authors must normally defray the cost of any such colour reproduction.**

Twenty-five copies of papers, cut straight from the journal, can be supplied free to authors. Additional copies must be paid for. All copies must be ordered on the form supplied with galley proofs. We regret we cannot supply copies of notes. Whilst all reasonable care is taken of manuscripts and other material neither the Editor nor his staff can accept responsibility for any loss or damage.

BENHS ANNUAL EXHIBITION

(British Entomological and Natural History Society)

SATURDAY, 25th OCTOBER 1997

**Sherfield Room, Imperial College,
South Kensington, London SW7**

11am - 5pm

ADMISSION FREE

Members and non-members alike are invited to bring exhibits to illustrate their entomological discoveries for 1997 and earlier years. This major event in the entomological calendar is as much a social gathering as a scientific meeting. It is an excellent opportunity to meet other entomologists from all over Britain (and some from overseas) and should be of particular interest to beginners in entomology as well as to those with some experience. As always, a table will be provided on which unidentified specimens may be placed for identification by the experts during the day.

BENHS ENTOMOLOGY WORKSHOPS

Places are still available on the following workshops

- 4th October 1997** – Staphylinid identification - led by Derek Lott
- 15th November 1997** – Caddis identification - led by Ian Wallace
- 29th November 1997** – Oecophorid identification - led by John Langmaid
- 31st January 1998** – Insects in stems - led by Ian McLean
- 21st February 1998** – Tephritidae identification - led by Laurence Clemons
- 21st March 1998** – Andrena identification - led by Mike Edwards
- 18th April 1998** – cryptic and elusive bugs - led by Peter Kirby
- 16th May 1998** – Pyralid moth identification - led by Tony Davis

These are held on Saturdays at the Society's headquarters in The Pelham Clinton Building, Dinton Pastures Country Park, Winnersh, near Reading, Berkshire (grid reference SU 784718). Turn left off the B.3030 driving north from Winnersh. Fee for parking waived for workshop attendees. Nearest BR station is Winnersh (trains from Reading and London-Waterloo). The nearest motorway exit is junction 10 on the M4 - the A.329(M) interchange between Reading and Bracknell. Advance booking is required for planning the events. Please inform Ian McLean, 109 Miller way, Brampton, Huntingdon, PE18 8TZ if you wish to attend.

THE AMATEUR ENTOMOLOGISTS' SOCIETY ANNUAL EXHIBITION, 1997

Saturday, 4th October

11 a.m. to 5 p.m.

**KEMPTON PARK RACECOURSE,
STAINES ROAD, SUNBURY, MIDDLESEX.**

ACCESSIBILITY: The Racecourse is easy to reach by road and rail, and there is adequate free car parking. The M25 is very near and is linked to Kempton Park by the M3, which is less than a mile away. Sunbury Railway Station with trains from Waterloo, is a short walk away. The site is served by two bus routes, Green Line No. 290, and Red bus No. 216. Both these buses stop right outside.

ADMISSION: *Members free* on production of pass to be issued with the August Bulletin.

PARKING: in the free car parks *only*. NOT outside the Grandstand. Keep all entrances clear.

EXHIBITORS AND DEALERS ONLY will be admitted between 8 am and 11 am.

TROLLEYS are not provided and provision should be made for heavy loads.

ENTOMOLOGICAL DEALERS are attending.

REFRESHMENTS: Full facilities are available. All food and drink to be consumed in the Refreshment Area.

SURPLUS MATERIAL: will be welcome for sale on behalf of the Society's funds.

ANSORGE BEQUEST: Cash prizes and certificates to Junior Members for exhibits at the Exhibition.

LIVESTOCK: It is the duty of both dealers and buyers to ensure that all livestock is kept in containers which are roomy, hygienic and secure against any possible escape.

EXHIBITS which show long series of wild-caught, rare or endangered species will not be allowed.

ALL ENQUIRIES:

The AES, PO Box 8774, London SW7 5ZG.

THE IMMIGRATION OF LEPIDOPTERA TO THE BRITISH ISLES IN 1993

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IN 1993 BOTH THE regular and scarcer immigrants were well below their usual numbers. Only single records of the Bordered Straw *Heliothis peltigera* ([Denis & Schiffermüller]) and Scarce Bordered Straw *Heliocoverpa armigera* (Hübner) were received and were, when compared with the relevant abundance of these two species in recent years, good examples of the paucity of migrants for the year. Reports of about seventy Clouded Yellow *Colias croceus* (Fourcroy) were a dramatic contrast to the record numbers noted the previous year and, with the status of a "scarcer species", all records have been detailed in Annex 1.

Fortunately even the poorest migrant years have their highlights and in 1993 there were the second British records of both Porter's Rustic *Proxenus hospes* (Freyer) and Tawny Prominent *Harpyia milhauseri* (Fabricius), and the fourth example of Radford's Flame Shoulder *Ochropleura leucogaster* (Freyer). The three records of Dusky Hook-tip *Drepana curvatula* (Borkhausen) represented a record total for a single year and brought the total number of specimens noted in Britain to nine. First prize must go to the specimen of the Rosy Underwing *Catocala electa* (Vieweg) found fluttering during the day in the car park of the Old Bill Lighthouse on Portland, Dorset, and presented to the resident entomologist of the local bird observatory. This is only the second example of this spectacular species to have been reported in the British Isles this century.

Details of the commoner species which in previous years have been summarised in the preamble are to be found in Annex 2.

In the hope of aiding the compilation of the migrant reports for future years and enabling a quicker publication it is requested that records should be stated clearly with as full details as possible and ideally the Watsonian vice-county should be given. If it is not possible to give the vice-county, a six figure grid-reference would aid the placing of the record within a vice-county at the compilation stage. The dates given for the records should be the day of the sighting, or if from a light trap it should be the date of the evening that the trap was operated. If the date given with the records is for the following morning, this should be stated clearly so that the records could be suitably amended to ensure a consistent approach.

The species listed in the annexes are laid out following Bradley & Fletcher (1979), although the nomenclature has been updated utilising Karsholt & Razowski (1996). Several records were supplied by more than one contributor and it is possible that some duplication of records has occurred,

although every effort was made to eliminate this. Little attempt has been made to interpret locality data and it is possible that the same site is occasionally treated by different names. Records placed in square brackets either require confirmation, are known to be releases or, as in the case of the Cypress Carpet *Thera cypressata* (Geyer), are of individuals that are considered to be resident but are included for interest. The abbreviations listed below are used in Annex 1.

Abbreviations

| | |
|------|-------------------------|
| I | Primary immigrants |
| R | Resident |
| R(i) | Recent resident/Invader |
| R(t) | Temporary resident |
| V | Vagrant/wanderer |

ANNEX 1: RECORDS OF "SCARCER" SPECIES

PYRALIDAE

Sitochroa palealis ([Denis & Schiffermüller]) [I?/R?/R(t)?]

Note: Possible immigrant examples only.

SOUTH HAMPSHIRE (11): Beaulieu, 20.6 (BIJ per BG); Hayling Island, 12.7 (R.R. Cook); NORTH HAMPSHIRE (12): East Stratton, 21.7 (A.M. James per BG); EAST KENT (15): Dungeness, 7.7 (SPC).

Ostrinia nubilalis (Hübner) [I?/R?/R(t)?]

Note: Records outside Thames estuary only.

SOUTH HAMPSHIRE (11): Bitterne, 29.7 (P.A. Budd per BG); Brockenhurst, undated - 3 (J.E. Chainey per BG); EAST SUSSEX (14): Peacehaven, 10.6; 7.7; 20.7 (CRP); EAST KENT (15): Greatstone, 11.10 (BB per SPC).

Udea fulvalis (Hübner) [I?/R(t)]

ISLE OF WIGHT (10): Freshwater, 8.8; 11.8 (SAKJ); SOUTH HAMPSHIRE (11): Christchurch, 7 - several (MJ per BG).

Palpita unionalis (Hübner) [I]

WEST SUSSEX (13): Thorney Island, 6.6 (per M. Kenefick per CRP); WEST SUSSEX (13): Beeding, 16.8 (GH per CRP); EAST SUSSEX (14): Newhaven, 24.8 (per GH per CRP); Peacehaven, 13.8 (CRP); EAST KENT (15): Dungeness, 11.9 - 1 male (SPC); Littlestone, 10.10 - 1 female (KR per SPC); SOUTH ESSEX (18): Bradwell-on-Sea, 19.9 - 1 female; 11.10 - 1 female (AJD).

Conobathra tumidana ([Denis & Schiffermüller]) [I?]

WEST SUSSEX (13): Pagham, 14.8 (BFS).

Dioryctria abietella ([Denis & Schiffermüller]) [I?/V?]

SURREY (17): Addington, 9.6 (BFS).

Ancylosis oblitella (Zeller) [I?/R(t)?/R?]

ISLE OF WIGHT (10): Chale Green, 23.7 (SC per BG).

PIERIDAE**Clouded Yellow *Colias croceus* (Fourcroy) [I]**

WEST CORNWALL (1): The Lizard, 25.8 (J. Whiteside); Old Town Bay, St. Mary's, Isles of Scilly, 27.5 (R.D. Penhallurick); Isles of Scilly, mid 10 - "one or two reported, but no further details" (VT); EAST CORNWALL (2): Portquin, nr. Port Isaac, 1.7 (AG); SOUTH DEVON (3): Locality not given, "small arrival ... was evident for several days beginning 7.8" (VT); Churchstone, nr. Kingsbridge, 5.8 (P. Sanders per VT); Strete gate, Slapton Sands, 8 - 20; 1.9; 3.9; 10.9 - 2; 11.9; 15.9 - 2; 16.9 (HLO'H); DORSET (9): Ballard Down, undated - 3 (B. Shreeve); Portland, 5.8 - 2 male; 2.9 - 1 male (A. Harmer); 6.8 to 18.8 - 4; 26.8 - 5; 27.8 - 2; 28.8 - 2; 29.8 - 2 (MC); ISLE OF WIGHT (10): Binstead, 24.10 (BJW per SAKJ); Gorecliff, Blackgang, 7.5 (AW per SAKJ); HAMPSHIRE: Locality not given, undated (Bowles (1993a); SUSSEX: Locality not given, undated (Bowles 1993a); WARWICKSHIRE (38): Locality not given, 6.9 (Bowles 1993b); STAFFORDSHIRE (39): Saltwells LNR, 28.7; 7.8 (per T. Beynon); SOUTH LINCOLNSHIRE (53): TF435326, undated (per A. Binding); SOUTH-EAST YORKSHIRE (61): Spurn Head, 10.9; 11.9 (BS); NORTHUMBERLAND: Locality not given, 25.9 (Bowles 1993b); CHANNEL ISLANDS (113): South coast of Guernsey, 31.5 (Mr Kinsey per Austin (1993)); Guernsey, Le Petit Pre, 31.7 (Austin 1993); Guernsey, La Corbiere, 18.8 (MH per Austin (1993)); Guernsey, Belle Elizabeth, 13.10 (MH per Austin (1993)); Guernsey, Long Cavaleux, 13. 10; 15.10 (MH per Austin (1993)); Guernsey, Mont Heralt, 18.10 (MH per Austin (1993)); MID CORK (H4): Lee Fields, 29.8 (KGMB); CO. DOWN (H38): Ballykeel, Ballygowan, 13.5 (C. Coates per IR).
Summary: (1): 3; (2): 1; (3): 30; (9): 21; (10): 2; Hampshire: 1; Sussex: 1; (38): 1; (39): 2; (53): 1 (61): 2; Northumberland: 1; (113): 7; (H4): 1; (H38): 1.

DREPANIDAE**Dusky Hook-tip *Drepana curvatula* (Borkhausen) [I]**

WEST SUSSEX (13): Church Norton, Pagham, 24.5 (RFMc); Middleton-on-Sea, 29.8 (IDM & R.J. Brooker); NORTH LINCOLNSHIRE (54): Dalby, 30.7 (Mrs M.E. Dawson per RJ).

GEOMETRIDAE**The Gem *Orthonoma obstipata* (Fabricius) [I]**

WEST CORNWALL (1): Isles of Scilly, 12.7 - 1 (RAS); St. Agnes, Isles of Scilly, 30.4; 11.5 - 1 male; 30.7; 31.7; 4.8 - 2; 13.8; 16.8; 19.8 - 2; 4.9; 12.9; 28.9 - 6; 3.10 - 3; 6.10 - 15; 10.10 - 2; 12.10 - 2; 13.10 - 5; 30.10; 4.11 - 3; 5.11 (JWH & MEH); SOUTH HAMPSHIRE (11): Leckford, 23.7 (DHS); Winchester, 31.5; 8.7 (DHS); EAST SUSSEX (14): Peacehaven, 21.9 - 1 female (CRP); EAST KENT (15): Dungeness, 20.9 - 2 (BFS); 3.11 - 1 male (SPC); Folkestone Warren, 20.9 - 1 female (TR per SPC); Greatstone, 3.8 - 1 male (BB per SPC); SOUTH ESSEX (18): Bradwell-on-Sea, 19.9 - 1 female; 20.9 - 1 male (AJD); 11.9 - 1 male; 19.9 - 1 male; 20.9 - 1 female (SD); WARWICKSHIRE (38): Charlecote, 28.7 (AG); Rugby, 6.8; 25.9 (Dr D. Porter per AG); SOUTH-EAST YORKSHIRE (61): Spurn Head, 11.10 (BS); MID CORK (H4): Cork, 22.9 (KGMB).
Summary: (1): 51; (11): 3; (14): 1; (15): 5; (18): 5; (38): 2; (61): 1; (H4): 1.

[Cypress Carpet *Thera cypressata* (Geyer) [R]

Note: All records probably represent resident examples.

DORSET (9): Durlston, 1.7 (per DB²); CHANNEL ISLANDS (113): Guernsey, St. John, 8.6 (Austin 1993); Guernsey, L'Ancrese, 19.6 (Austin 1993); Guernsey, Damouettes Lane, 17.7 (Austin 1993).]

SPHINGIDAE***Convolvulus Hawk-moth Agrius convolvuli* (Linnaeus) [I]**

WEST CORNWALL (1): St. Agnes, Isles of Scilly, 16.8; 31.7; 8.9; 21.9; 12.10 (JWH & MEH); 25.9 - 1 washed up dead on the shoreline (A. McCrae per Waring (1993)); SOUTH DEVON (3): West Charleton, nr. Kingsbridge, 9.9 (PS per VT); NORTH SOMERSET (6): Keynsham, Bristol, 6.7 (Mrs J. Pusey per RJB); DORSET (9): Portland, 24.9 (MC); West Bexington, 18.8; 10.9; 16.9; 18.9; 23.9 (RME); ISLE OF WIGHT (10): Bembridge, 10.9 (Dr Thomas per SAKJ); Binstead, 8.9, at petunias (R. Gough per SAKJ); WEST SUSSEX (13): Hassocks, undated (DD per CRP); Portslade, 10.10 at rest on a road (D. Burchell per CRP); Walberton, 7.10 (JTR per CRP); Wick (Littlehampton), 1.7 (R. Pratt per CRP); EAST SUSSEX (14): Ringmer, 11.10 (AB per CRP); EAST KENT (15): Hythe, 3.10 - 1 male (B. Searle per TR per SPC); near Folkestone, 2.10 - 1 female (Tansley 1994); SOUTH ESSEX (18): Bradwell-on-Sea, 18.8 - 1 male (AJD); ESSEX: No locality given, 9 (Waring (1993)); EAST SUFFOLK (25): Fagbury Cliffs, Felixstowe, 10.10 - 1 found at rest on a concrete post (G. Grieco); EAST NORFOLK (27): Waxham, 22.8 (KJB per DH); Wheatacre, 13.9, at *Nicotiana* flowers; 2.10; 3.10 (R.P. Harvey per DH); MERIONETHSHIRE (48): Cwm Bychan, 29.8 (NH).
Summary: (1): 6; (3): 1; (6): 1; (9): 6; (10): 2; (13): 4; (14): 1; (15): 2; (18): 1; Essex: 1; (25): 1; (27): 2; (48): 1.

***Death's-head Hawk-moth Acherontia atropos* (Linnaeus) [I]**

NORTH SOMERSET (6): Cheddar Gorge, end 6 (per A. Woodhall per RJB); NORTH HAMPSHIRE (12): Selborne, 22.8 (AEA); week-ending 17.9 - 2 (DO per Waring (1993)).

***Pine Hawk-moth Hyloicus pinastri* (Hübner) [I?/V?]**

Note: Possible immigrant examples only.

EAST KENT (15): Dungeness, 3.6; 7.6 (SPC & DW); Greatstone, 18.5; 15.6; 25.6 (BB per SPC).

***Humming-bird Hawk-moth Macroglossum stellatarum* (Linnaeus) [I/R(t)?/R?]**

WEST CORNWALL (1): St. Agnes, Isles of Scilly, 13.6 - 2; 1.9; 2.9; 5.9; 8.9 (JWH & MEH); SOUTH DEVON (3): Hooe, near Plymouth, 28.6 (VT); South Milton Ley, Thurlestone, undated (VT); Strete Gate, Slapton Sands, 1.8; 3.8; 7.8 - 2; 8.8 - 2; 10.8; 12.8; 13.8 - 3; 14.8 - 3; 14.8 - 5; 15.8; 18.8 - 2; 24.8 - 3; 26.8 - 3; 28.8; 31.8 (possibly only about 3 moths involved over these dates) (HLO'H); West Charleton, nr. Kingsbridge, 25.7 (PS per VT); SOUTH SOMERSET (5): Hinckley Point, end 1 (K. Cadwalдар per KB); DORSET (9): Portland, 27.4; 24.7; 6.8 (MC); WEST SUSSEX (13): Climping, 7.8; 15.8 (RJK per CRP); EAST SUSSEX (14): Beachy Head, 24.3 (R.H. Charlwood per CRP); EAST KENT (15): Dungeness, 10.8; 13.8; 20.8; 3.9 (DW & SPC); NORTHAMPTONSHIRE (32): Great Houghton, undated (A. Pyke); SOUTH-EAST YORKSHIRE (61): Spurn Head, 16.7 (BS); CHANNEL ISLANDS (113): Guernsey, La Coutanche, 4.11 (Austin 1993); CO. DOWN (H38): Johns Island, Copelands, 26.9 - 5+ (N. McKee per IR); Killard Point, 27.8 - 3 (S. Foster per Miss J. Montgomery per IR).
Summary: (1): 6; (3): 33; (5): 1; (9): 3; (13): 2; (14): 1; (15): 4; (61): 1; (113): 1; (H38): 8+.

***Spurge Hawk-moth Hyles euphorbiae* (Linnaeus) [I]**

EAST KENT (15): Dungeness, 12.8 - 1 female (DW per SPC).

***Bedstraw Hawk-moth H. gallii* (Rottemburg) [I]**

EAST KENT (15): Greatstone, 9.6 - 1 female (RET per SPC); WEST GLOUCESTERSHIRE (34): St Briavels, Lydney, 10.6 - 1 to actinic light (R. Gaunt); NORTH LINCOLNSHIRE (54): Gibraltar Point, 7.6 (K. Wilson per RJ).

Silver-striped Hawk-moth *Hippotion celerio* (Linnaeus) [I]

DORSET (9): Coombe Keynes, 19.10, found resting on a flower (Mrs A. Johnson per PHS per DHS).

NOTODONTIDAE**Tawny Prominent *Harpyia milhauseri* (Fabricius) [I]**

EAST KENT (15): Dungeness, 24.5 - 1 male (KR per SPC).

LYMANTRIDAE**Brown-tail *Euproctis chrysorrhoea* (Linnaeus) [I?/V?/R?]**

Note: Records outside known resident range only.

EAST NORFOLK (27): Hemsby, 30.6; 2.7 (KJB per DH).

Gypsy Moth *Lymantria dispar* (Linnaeus) [I]

ISLE OF WIGHT (10): Chale Green, 1.9 - 1 male (SC per SAKJ).

ARCTIIDAE**Jersey Tiger *Euplagia quadripunctaria* (Poda) [I?/R(t)?/V?]**

DORSET (9): Portland, 14.8 (MC); ISLE OF WIGHT (10): Freshwater, 19.8 - 1 female (SAKJ); 21.8 (DBW per SAKJ).

NOLIDAE**Scarce Black Arches *Nola aerugula* (Hübner) [I]**

EAST KENT (15): Greatstone, 2.7 - 1 male (BB per SPC).

NOCTUIDAE**Crescent Dart *Agrotis trux* (Hübner) [I?/V?]**

EAST KENT (15): Dungeness, 11.9 - 1 male (SPC).

Radford's Flame Shoulder *Ochropleura leucogaster* (Freyer) [I]

EAST KENT (15): Dungeness, 11.10 - 1 male (SPC).

Great Brocade *Eurois occulta* (Linnaeus) [I]

SOUTH-EAST YORKSHIRE (61): Spurn Head, 15.9 (BS).

White-point *Mythimna albipuncta* ([Denis & Schiffermüller]) [I/R(t)?]

WEST CORNWALL (1): St. Agnes, Isles of Scilly, 5.6; 29.8; 31.8 - 2 (JWH & MEH); DORSET (9): Durlston, 29.1; 29.6 (per DB³); Portland, 14.8 to 14.9 - 24 (peak on 15.8 - 4) (MC); West Bexington, 7.6; 25.8; 15.9 (RME); Woolgarston, Corfe Castle, 20.9 (DB³); ISLE OF WIGHT (10): Binstead, 9.6 (BJW per SAKJ); Chale Green, 27.5; 1.9; 2.9 (SC per SAKJ); Freshwater, 12.9; 20.9; 21.9 - 2 (SAKJ); Niton, 2.9 (AW per SAKJ); SOUTH HAMPSHIRE (11): Brockenhurst, 8.9; 9.9 (JEC); East Boldre, 8.6; 13.6 (GEH); Hengistbury Head, 15.9; 7.10 (MJ per BG); WEST SUSSEX (13): Walberton, 21.8; 2.9; 8.9; 19.9 (JTR per CRP); EAST SUSSEX (14): Beachy Head, 20.9 - 2 (JC); Crowborough, 15.9 (MJS per CRP); Peacehaven, 16.9 (CRP); Ringmer, 20.9 (AB per CRP); EAST KENT (15): Densole, 25.8 - 2; 26.8; 29.8; 19.9; 20.9 (TR per SPC); Dungeness, 6.9; 2.7; 17.8; 29.8 - 2; 30.8; 31.8; 3.9; 4.9 - 3; 6.9 - 2; 10.9; 11.9 - 3; 14.9; 15.9; 17.9; 18.9; 19.9; 20.9 (SPC, KR per SPC and DW per SPC); 9.6 - 2; 8.9 - 5; 20.9 - 2; 6.10 (BFS); 19.8 (JC); Folkestone Warren, 3.10 (TR per SPC); Greatstone, 10.9; 11.9;

14.9 (BB per SPC); Lydd, 22.6; 23.6; 26.8; 27.8; 9.9; 10.9 (KR per SPC); New Romney, 23.8; 1.9; 14.9 (KR per SPC); SURREY (17): Lingfield, 13.9 (JC); SOUTH ESSEX (18): Bradwell-on-Sea, 8.6 - 1 male; 17.6 - 1 male; 22.6 - 1 male; 8.8 - female; 13.8 - 1 male; 16.8 - 1 female; 21.8 - 1 male; 10.9 - 1 male; 12.9 - 1 male; 19.9 - 1 male; 22.9 - 1 female (AJD); 26.6 - 1 male; 14.8 - 1 female; 10.9 - 1 female; 11.9 - 1 male (SD); CHANNEL ISLANDS (113): Guernsey, L'Ancrese, 5.6; 7.8; 20.8 (Austin 1993).

Summary: (1): 4; (9): 30; (10): 9; (11): 6; (13): 4; (14): 5; (15): 53; (17): 1; (18): 15; (113): 3.

The Delicate *M. vitellina* (Hübner) [I/R(t)?]

WEST CORNWALL (1): Coverack, 18.9 - 2; 19.9 - 3; 20.9 - 4; 21.9 - 5; 22.9 - 5; 23.9 - 10 (DB); North Predannack Downs, The Lizard, 12.10 (AS); St. Agnes, Isles of Scilly, 12.4 - 2; 13.4 - 2; 14.4 - 5; 15.4 - 3; 25.4; 5.5; 20.5 - 7; 21.5; 23.5 - 8; 25.5 - 3; 26.5; 28.5 - 7; 29.5; 31.5 - 3; 2.6 - 2; 4.6 - 6; 5.6; 6.6 - 3; 8.6 - 3; 11.6; 19.6; 23.6; 30.6 - 2; 3.7 - 3; 31.8 - 2; 4.9 - 2; 8.9 - 3; 12.9 - 2; 14.9 - 4; 15.9 - 7; 21.9 - 13; 21.9 - 5; 23.9 - 2; 26.9; 28.9 - 5; 6.10; 9.10 - 2; 10.10; 12.10 - 4; 13.10 - 4; 26.10; 30.10; 31.10; 2.11 (JWH & MEH); EAST CORNWALL (2): Carlyon Bay, St. Austell, 24.9 (AS); Tregarne, 2.8; 11.10 (A. Spalding); NORTH SOMERSET (6): Westonzoyland, 3.7 (D. Miller per KB); DORSET (9): Durlston, 11.10 - 4; 12.10 - 4 (DB); 4.9; 8.9 - 2; 20.9 - 2; 25.9; 9.10; 11.10; 12.10 - 2; 13.10; 4.11 (per DB²); Portland, 19.6 - 2; 4.7 - 8; 11.9 - 2; 7.9 - 13; 8.11 (MC); Studland, 10.10 - 5; 11.10 - 3; 12.10 - 3 (DB); West Bexington, 13.6; 14.6; 21.6; 23.6; 25.6; 27.6; 30.6; 10.9; 15.9; 20.9; 22.9; 24.9; 25.9; 2.10; 10.10; 11.10; 25.10; 27.10; 30.10 (RME); Woolgarston, Corfe Castle, 27.6; 1.7; 2.7; 4.7; 18.7; 22.7; 26.7; 14.9 - 2; 19.9; 23.9 - 2 (DB²); ISLE OF WIGHT (10): Chale Green, 30.6; 22.7; 11.9 - 2; 11.10 - 4; 3.11 - 2 (SC per SAKJ); Cranmore, 2.7; 4.11 (SAKJ); Freshwater, 4.7; 9.7; 15.7; 15.9; 25.9; 29.9; 12.10; 27.10; 28.10 (SAKJ); 27.6 - 2; 29.6 - 2 (DBW per SAKJ); Niton, 17.7 (AW per SAKJ); SOUTH HAMPSHIRE (11): Brockenhurst, 27.6; 9.9 (JEC); Hegistbury Head, undated - 21 (MJ per BG); Woolston, Southampton, 14.7 (ARC); NORTH HAMPSHIRE (12): Selborne, 4.7 (AEA); WEST SUSSEX (13): Climping, undated (R.J.L. Kemp per CRP); Middleton-on-Sea, 10.9 (R.J. Brooker per IDM); Walberton, 29.7; 20.9; 9.10; 10.10; 11.10; 24.10; 26.10; 28.10 (JTR per CRP); EAST SUSSEX (14): Crowborough, 28.7, 11.10 (MJS per CRP); Peacehaven, 19.6; 1.7 (CRP); EAST KENT (15): Densole, 8.9; 11.9; 16.9; 19.9 - 2; 25.9 - 2; 8.10; 10.10; 11.10 (TR per SPC); Dungeness, 22.6; 10.9; 11.9; 21.9; 14.9 - 2; 20.9 - 2 (DW per SPC); 9.9; 11.9 - 2; 14.9 - 3; 15.9; 3.10 - 2; 7.10; 9.10; 10.10 - 2; 11.10; 12.10 - 2 (KR per SPC); 15.7; 7.9; 11.9; 14.9; 7.10 - 2; 13.10 (SPC); 20.9 - 5; 6.10 - 2 (BFS); Greatstone, 15.6; 29.9; 7.10 - 3; 8.10; 9.10 (BB per SPC); Littlestone, 20.9; 3.11; 4.11 (KR per SPC); Lydd, 9.9; 15.9 - 3; 29.9; 2.10; 13.10 (KR per SPC); New Romney, 9.9; 10.9 - 2; 7.10; 8.10; 10.10 - 2; 11.10 - 3; 12.10 - 2; 23.10 (KR per SPC); SURREY (17): Lingfield, 25.6 - 1 fresh male; 14.7 - 1 male (JC); SOUTH ESSEX (18): Bradwell-on-Sea, 28.6; 13.7; 5.8; 13.9; 14.9 - 3; 19.9 - 3; 20.9; 21.9 - 2; 22.9 - 3; 23.9 - 2; 8.10; 9.10; 10.10; 11.10 - 3; 12.10 - 2 (AJD); 13.9 - 2; 16.9 (SD); CHANNEL ISLANDS (113): Guernsey, St. John, 14.7 (Austin 1993); Guernsey, L'Ancrese, 16.7; 11.9 (Austin 1993).

Summary: (1): 160; (2): 3; (6): 1; (9): 88; (10): 26; (11): 24; (12): 1; (13): 10; (14): 4; (15): 78; (17): 2; (18): 29; (113): 3.

White-speck *M. unipuncta* (Haworth) [I]

WEST CORNWALL (1): Coverack, 22.9 (DB); North Predannack Downs, The Lizard, 12.10 (AS); St. Agnes, Isles of Scilly, 30.4; 20.5; 23.5; 26.5; 29.5; 15.9; 17.9; 21.9; 23.9; 26.9; 28.9; 4.10; 9.10 - 2; 10.10; 12.10 - 3; 13.10; 19.10; 20.10 (JWH & MEH); DORSET (9): Durlston, 10.10 - 2; 11.10 - 4 (DB); 9.10; 10.10; 11.10 - 3 (per DB²); Portland, 2.10 (MC); Studland, 10.10 (DB); West Bexington, 10.10; 11.10 (RME); SOUTH HAMPSHIRE (11): Christchurch, 17.9 (MJ per BG); Hengistbury Head, 24.9; 7.10 (MJ per BG); NORTH HAMPSHIRE (12): Selborne, 20.9 (AEA); WEST SUSSEX

(13): Walberton, 20.9 (JTR per CRP); EAST KENT (15): Dungeness, 29.9; 3.10 (SPC); 11.10 (DW per SPC); SOUTH ESSEX (18): Bradwell-on-Sea, 22.9 (AJD); OXFORDSHIRE (23), Long Wittenham, Abingdon, 11.10 (DO).

Summary: (1): 23; (9): 15; (11): 3; (12): 1; (13): 1; (15): 3; (18): 1; (23): 1.

The Cosmopolitan *M. loreyi* (Duponchel) [I]

WEST CORNWALL (1): St. Agnes, Isles of Scilly, 25.5; 15.9; 17.9 (JWH & MEH).

Flame Brocade *Trigonophora flammea* (Esper) [I]

Note: Does not include Channel Islands where the species is resident.

DORSET (9): Durlston, 9.10 (per DB²); 10.10 (P. Sharpe); EAST KENT (15): Dungeness, 10.10 - 1 male (A. Butcher per SPC); 12.10 - 1 male (KR per SPC).

The Concolorous *Chortodes extrema* (Hübner) [I?/V?]

EAST KENT (15): Dungeness, 10.6 (SPC); Greatstone, 1.6 (BB per SPC).

Small Mottled Willow *Spodoptera exigua* (Hübner) [I]

WEST CORNWALL (1): Tregarne, 11.10 (AS); SOUTH HAMPSHIRE (11): Beaulieu, undated (recorded as "[fairly common]") (BIJ per BG); Woolston, Southampton, 27.8 (ARC).

Porter's Rustic *Proxenus hospes* (Freyer) [I]

WEST CORNWALL (1): St Agnes, Isles of Scilly, 14.9 (JWH & MEH, see also Agassiz (1994)).

Scarce Bordered Straw *Heliocoverpa armigera* (Hübner) [I]

WEST CORNWALL (1): St. Agnes, Isles of Scilly, 7.9 - 1 found by day (JWH & MEH).

Bordered Straw *Heliothis peltigera* ([Denis & Schiffermüller]) [I]

NORTH LINCOLNSHIRE (54): Hemswell, 2.7 (RJ).

Silver Barred *Deltote bankiana* (Fabricius) [I?/V?]

EAST SUSSEX (14): Peacehaven, 9.6 (CRP); EAST KENT (15): Dungeness, 9.6 - 1 (BFS); SOUTH ESSEX (18): Bradwell-on-Sea, 26.5 (AJD); EAST NORFOLK (27): Hemsby, 9.6 (K.J. Brett, conf. G. Haggett per DH); Scole, 6.6 (M.R. Hall).

Golden Twin-spot *Chrysodeixis chalcites* (Esper) [I]

EAST KENT (15): Lydd, 19.8 - 1 male (Miss P. Carter per SPC); SOUTH ESSEX (18): Bradwell-on-Sea, 20.9 - 1 female; 22.9 (AJD).

Dewick's Plusia *Macdunnoughia confusa* (Stephens) [I]

EAST KENT (15): New Romney, 21.9 - 1 male (KR per SPC).

Gold Spangle *Autographa bractea* ([Denis & Schiffermüller]) [I?/V?]

SOUTH ESSEX (18): Bradwell-on-Sea, 22.7 (AJD).

Clifden Nonpareil *Catocala fraxini* (Linnaeus) [I]

WEST CORNWALL (1): Cot Manor, near St. Just, 14.8 (K. Jackson per Spalding (1994)).

Rosy Underwing *C. electa* (Vieweg) [I]

DORSET (9): Portland, 11.9 (MC).

Lunar Double-stripe *Minucia lunaris* ([Denis & Schiffermüller]) [I]

DORSET (9): Gaunts Common, 26.5 (PD per DB per BFS).

Olive Crescent *Tristalis emortalis* ([Denis & Schiffermüller]) [I]
SOUTH ESSEX (18): Bradwell-on-Sea, 9.6 - 1 female (AJD).

ANNEX 2: SELECTED RECORDS OF "COMMONER" SPECIES

This annex gives a very brief summary of the abundance over the year as well as the earliest and latest date for the more frequent immigrant species which are not covered in Annex 1. Other significant records or observations for 1993 which have been received and were not covered in Annex 1, such as large numbers of an individual species, are also given.

YPONOMEUTIDAE

Plutella xylostella (Linnaeus)

Few records received and, although those that were provided no clear picture of abundance, it would appear to have been a poor year for the species. Over the year, a total of 254 were recorded at Portland, Dorset (9) (MC) and 28 were recorded at Peacehaven, East Sussex (14) (CRP).

Earliest date: SOUTH HAMPSHIRE (11): Winchester, 21.4 (DHS).

Latest date: DORSET (9): Portland, 7.11 (MC).

Other significant record: DORSET (9): Portland, 12.6 - 31 (MC).

PYRALIDAE

Udea ferrugalis (Hübner)

Comparatively few records received. Over the year, a total of 2 were recorded at Peacehaven, East Sussex (14) (CRP), 20 were recorded in the Dungeness area, East Kent (15) (per SPC) and 21 were recorded at Bradwell-on-Sea, South Essex (18) (AJD & SD). Earliest date: WEST CORNWALL (1): St. Agnes, Isles of Scilly, 30.4 (JWH & MEH).

Latest date: WEST CORNWALL (1): St. Agnes, Isles of Scilly, 18.11 (JWH & MEH).

Other significant records: WEST CORNWALL (1): St. Agnes, Isles of Scilly, 6.10 - 14; 12.10 - 29; 4.11 - 13 (JWH & MEH); CHANNEL ISLANDS (113): Guernsey, L'Ancrese 16.7 - 10; 23.7 - 11; 7.8 - c.15; 28.8 - c.12; 11.9 - 32 (Austin 1993).

Nomophila noctuella ([Denis & Schiffermüller])

Records received of approximately only 160 individuals. Over the year, a total of 2 were recorded at Peacehaven, East Sussex (14) (CRP) and 25 were recorded at Bradwell-on-Sea, South Essex (18) (AJD & SD).

Earliest date: ISLE OF WIGHT (10): Freshwater, 25.4 (SAKJ).

Latest date: SURREY (17): Lingfield, 4.11 (JC).

Other significant record: WEST CORNWALL (1): St. Agnes, Isles of Scilly, 12.10 - 29 (JWH & MEH).

PIERIDAE

Large White *Pieris brassicae* (Linnaeus)

Possibly significant records only: DORSET (9): Portland, strong northerly movements, in off the sea 16.8; 20.8 (MC).

NYMPHALIDAE

Red Admiral *Vanessa atalanta* (Linnaeus)

Many records received.

Earliest date: WEST CORNWALL (1): St. Agnes, Isles of Scilly, 14.1 (MEH & M. Horobin).

Latest date: CO. DOWN (H38): Helens Bay, 8.11 (T. Boyd per IR).

Other significant records: SOUTH DEVON (3): Rame Head and coastal strip to Penlee area, 15.9 - 500+ nectaring on ivy (VT); Strete Gate, Slapton Sands, 28.5 - 10; 4.9 - 30 (HLO'H); DORSET (9): Portland, 17.9 - large numbers (MC); WEST SUSSEX (13): Hove, 18.9 - 10 at one time on ivy (R.M. Craske per CRP); EAST SUSSEX (14): Peacehaven, 10.8 - 1 at mv light (CRP); SOUTH ESSEX (18): Bradwell-on-Sea, 20.4 - 10; 30.4 - 11; 20.6 - 20; 7.8 - 28 (AJD); SOUTH-EAST YORKSHIRE (61): Spurn Head, 10.6 - 30 (BS); CO. DOWN (H38): Arboretum, Castlewellan Forest, 15.8 - 10; 13.9 - 12; 20.9 - 10 (Mrs A. McComb per IR); Ballyskeagh, Newtonards, 22.9 - 12 (J. Phillips per IR); Glasdrumman House, Newcastle, 17.9 - 12 (Mrs A. McComb per IR); Johns Island, Copelands, 9.10 - 12 (N. McKee per IR).

Painted Lady *V. cardui* (Linnaeus)

Records received of only about 110 individuals.

Earliest date: DORSET (9): Portland, 25.4 (MC).

Latest date: NOTTINGHAMSHIRE (56), Colwick Park, 25.9 (A.S. Boot per Dr S. Wright).

NOCTUIDAE

Dark Sword-grass *Agrotis ipsilon* (Hufnagel)

Received records suggest a comparatively poor year. Over the year, a total of 69 were recorded at the Portland Bird Observatory, Dorset (9) (MC), 2 were recorded at Peacehaven, East Sussex (14) (CRP), 30 were recorded in the Dungeness area, East Kent (15) (per SPC) and 13 were recorded at Bradwell-on-Sea, South Essex (18) (AJD & SD).

Earliest date: WEST CORNWALL (1): St. Agnes, Isles of Scilly, 13.4 - 2 (JWH & MEH).

Latest date: WEST CORNWALL (1): St. Agnes, Isles of Scilly, 5.11 (JWH & MEH).

Other significant records: DORSET (9): Portland, 14.4 to 5.5 - 49; 25.7 to 14.9 - 20 (MC).

Pearly Underwing *Peridroma saucia* (Hübner)

Comparatively few records received comprising approximately 170 individuals. Over the year, a total of 17 were recorded at the Portland Bird Observatory, Dorset (9) (MC), none were recorded at Peacehaven, East Sussex (14) and 5 were recorded at Bradwell-on-Sea, South Essex (18) (AJD & SD).

Earliest date: Bristol, 12.2 (dead on a pavement) (P.J. Chadwick per RJB).

Latest date: DORSET (9): West Bexington, 1.12 (RME).

Silver Y *Autographa gamma* (Linnaeus)

Many records received, although possibly not as many as in some other recent years. Over the year, a total of 518 were recorded at the Portland Bird Observatory, Dorset (9) (MC), 301 were recorded at Peacehaven, East Sussex (14) (CRP) and 1,824 were recorded at Bradwell-on-Sea, South Essex (18) (AJD & SD).

Earliest date: SOUTH HAMPSHIRE (11): Woolston, Southampton, 17.3 (ARC).

Latest date: SOUTH SOMERSET (5): North Cheriton, 9.12 - freshly emerged example at rest on a wall (KB).

Selected significant records only: DORSET (9): Portland, 24.9 - 39 (MC); EAST SUSSEX (14): Peacehaven, 19.7 - 52 (CRP); SOUTH ESSEX (18): Bradwell-on-Sea, 17.7 - 31; 6.8 - 129; 7.8 - 128; 20.8 - 115 (AJD).

Initials of recorders

The recorders initials are listed alphabetically so that records can be extracted with relative ease.

| | | | | | |
|-----------------|--------------------|-------|------------------|------|------------------|
| AEA | A.E. Aston | DO | Dr D. Owen | MJ | M. Jeffes |
| AB | A. Batten | DW | D. Walker | MJS | M.J. Simmons |
| AG | A. Gardner | GEH | G.E. Higgs | NH | N. Hall |
| AJD | A.J. Dewick | GH | G. Hart | PD | P. Davey |
| ARC | A.R. Collins | HLO'H | H.L. O'Heffernan | PHS | Dr P.H. Sterling |
| AS | A. Spalding | IDM | I.D. Masters | PS | P. Sanders |
| AW | Mrs A. Wilkinson | IR | I. Rippey | RAS | R.A. Softly |
| BB | B. Banson | JC | Dr J. Clarke | RET | R.E. Turley |
| BFS | B.F. Skinner | JEC | J.E. Chainey | RFMc | R.F. McCormick |
| BG | B. Goater | JTR | J.T. Radford | RJ | R. Johnson |
| BIJ | B. Ivon-Jones | JWH | J. Hale | RJB | R. Barnett |
| BJW | B.J. Warne | KB | K. Brown | RJLK | R.J.L. Kemp |
| BS | B. Spence | KGMB | K.G.M. Bond | RME | R.M. Eden |
| CRP | C.R. Pratt | KJB | K.J. Brett | SAKJ | S.A. Knill-Jones |
| DB | D. Brown | KR | K. Redshaw | SC | S. Colenutt |
| DB ² | D. Burt | KW | K. Wilson | SD | S. Dewick |
| DBW | D.B. Wooldridge | MC | M. Cade | SPC | S.P. Clancy |
| DD | D. Dey | MEH | M.E. Hicks | TR | T. Rouse |
| DH | D. Hipperson | MH | M. Hill | VT | V. Tucker |
| DHS | Col. D.H. Sterling | | | | |

Other contributors

T. Beynon; A. Binding; J.L. Campbell; R.R. Cook; M.A. Enfield; P. Fleming; S.V. Gauld; R. Gaunt; G. Grieco; M.R. Hall; A. Harmer; A. Knight; R. Leverton; M.S. Parsons; R.D. Penhallurick; A. Pyke; A.N. Scott; P. Sharpe; B. Shreeve; W. & K. Wheatley; J. Whiteside; Dr S. Wright.

Acknowledgements

We would like to thank all of the above-mentioned recorders and contributors. It is possible that we have unwittingly failed to acknowledge some contributors, if this is the case we would like to take this opportunity to apologise for this oversight.

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THE EARLY STAGES OF *COLEOPHORA FUSCICORNIS*
ZELLER, 1847 (LEP.: COLEOPHORIDAE)

A.M. EMMET

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THE ACCOUNT GIVEN by Emmet (1996) was based on that written by Uffen in Emmet & Uffen (1975). Since his descriptions both of the larva and life history were incomplete, in 1994 I went in search of new material to Fingringhoe Wick Nature Reserve, Essex, where I had discovered the species in 1973. However, the open area where it had occurred was overgrown by scrub and I failed to observe it elsewhere. An opportunity to visit the only other known locality in Britain, close to a sea wall on the Essex coast, did not arise until 14 June 1996, when Dr John Langmaid drove me to the site. We found adults in good numbers, flying in the sunshine. Accordingly I made a second visit on 12 July to search for larval cases on the foodplant, smooth tare *Vicia tetraspermum*; likewise, they were not uncommon, up to five cases occurring on a single plant. I collected a sufficiency, but the number was later increased by young larvae that had been feeding in their pod without visible sign of their presence and tiny larvae that must have hatched from the supply of foodplant I had gathered at random. I intended a third visit to return the surplus, but unwisely combined the trip with a reconnaissance of the south-east coast of Suffolk, to see if the moth was present in that county. It was late afternoon after several long walks before I located a spot where smooth tare occurred, but without trace of *C. fuscicornis*. I thought it would be wrong to liberate my unwanted stock in Suffolk, and by then I was too tired for the additional mileage and subsequent walk that a visit to the Essex locality would have involved.

Since there are minor inaccuracies as well as omissions in Raymond Uffen's account, completed two years after I had given him the larvae, I will describe the life history in full.

Ovum

Laid on smooth tare *Vicia tetraspermum*, probably not on the pod itself, which is only beginning to form at the commencement of the flight period. In captivity newly hatched larvae were seen walking freely and this is likely to occur also in natural conditions, where they wander in search of a suitable pod. No hatched ovum was observed on any of the pods used as first cases. June-July.

Larva

Raymond Uffen evidently described a larva in its penultimate instar, which differs in certain respects from the final instar. This may be characteristic of the *trifolii* group, since Stuart (1958) states without detail that there are differences in pigmentation between the third and fourth larval instars of

C. frischella (Linnaeus) (?*alcyonipennella* (Kollar) *sensu* Stuart). The description that follows is of the final instar.

Head honey-brown. Body whitish green; prothoracic plate honey-brown with four black spots, two each side of a narrow median sulcus, one lateral and one posterior; other plates black; mesothoracic plate divided into four elongate sclerites, the posterior pair approximate, the anterior pair centred over the tips of the posterior pair and at an angle; metathoracic plate two well-separated elongate sclerites; lateral plates large, generally round and of equal size, but in some larvae that on thoracic segment 1 larger and elongate in the horizontal plane; anal plate large, covering whole segment; thoracic legs honey-brown with posterior black spot; four pairs of abdominal prolegs. In the first instar, only the prothoracic plate is pigmented, pigmentation extending to the mesothoracic plate in the second and third instars and to the metathoracic plate in the final instar.

Newly-hatched larvae were observed to walk freely and rapidly, using only their thoracic legs and anal claspers; the other abdominal prolegs appear to be non-functional. The body is held horizontal and not arched, as described for other species by Sich (1904-05). When the larva finds a suitable pod, it enters it and feeds on the ripening peas. At this stage, there is no evidence of its presence; Uffen is incorrect in stating that there is already an anal opening for the ejection of frass. When the contents of the pod have been consumed, the larva severs it untidily near the stalk and, using it as a case, walks in search of another pod to which it attaches its case, generally at the tip and in alignment, but sometimes near the stalk, where it may be fixed vertically (mouth angle 90°) or almost horizontally (mouth angle c. 5°). This variation is possible because there is no silken reinforcement at the oral opening of the case. Most seed-feeding coleophorids attack a succession of small seeds involving frequent transportations of the case, and whilst feeding the posterior part of the larva remains within its case; therefore a well-formed oral opening that can be attached firmly with silk and allows constant passage is needed. *C. fuscicornis* uses only three or four pods and wholly enters the new pod, returning only to defecate; this is the probable reason why the oral and anal openings are left as jagged, unfashioned holes. The pod in which the larva is feeding is green, but the one used as a case turns yellowish-brown or greyish-brown and this contrast in colour makes the case conspicuous. During the period in which the contents of the second pod are being eaten, the larva cuts an untidy, irregular slit at the tip of the pod it is using as a case and from then onwards frass is ejected. Soon a third pod is needed and the larva appears to have three strategies for making the transfer. Most often the first pod is large enough, is severed from the second and the larva continues to use it as a portable case. Sometimes, when the first pod is too small, the second pod is severed and the larva carries both pods in tandem so that when the third pod is attached, the three are strung together

like beads. The third method is for the larva to vacate the pod and walk fully exposed in search of another. It moves swiftly and its gait is as described for the newly-hatched larva. Clover-feeding members of the *trifolii* group can also change florets without the use of a case.

The inner walls of the pod used as a case are thinly spun with silk, but otherwise little silk is used during the feeding phase. When feeding is finished, the larva spins a tough, trivalved, pale reddish-brown case or cocoon at the anal end of its pod. It is firmly attached to the inner walls and there appears to be no anal opening to enable the larva to move to the oral end of the pod for locomotion in the spring. Uffen noted that in January the larvae were already facing the valves for pupation and emergence. The case is attached for the winter low down to a stem or to detritus. Larvae are fully-fed in late July or early August.

Pupa

In the cocoon-like case spun inside the pod, the transition probably occurring in April.

Imago

Univoltine, occurring in late May and June. The adult flies or is easily disturbed in sunshine. There is probably a long emergence period, since newly-hatched and fully-fed larvae are found simultaneously.

Distribution

Known in Britain only from Essex, where it occurs close to the sea on sparse grassland suited to the growth of smooth tare. Though at present reported from only one site, it is likely to be found in similar localities in the south-east of England.

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POSTSCRIPT: A second locality, situated on the Essex coast, was discovered by Brian Goodey on 17 May 1997.

Imported insects: British or not?

Further to the comments by Brigadier Simpson (*Ent. Rec.* **108**: 210) and Mr Allen (*antea*, 88), I am given to wonder about the "Britishness" of many of our immigrants. For example, on 29 December 1996, my wife bought a lettuce at Tesco's. When it was brought home it was discovered to have a green noctuid larva in it, which I must admit I did not describe carefully. My daughter insisted that we keep it (I was at work at the moment of discovery), so we bred it through. It pupated in peat in the third week of January. In February we were on holiday and, when we returned, we found it had already emerged. It turned out to be a male *Heliothis armigera* Hb.

The original lettuce came from a pallet-sized box which evidently had not been opened or inspected since leaving Spain. I see that Bernard Skinner in his *Colour identification guide to moths of the British Isles* alludes to tomatoes from the Canaries as being a source of this moth. Does this make them British?

A more extraordinary example is a butterfly I have from my father, who used to provide all the plants for the Queen Mary and Queen Elizabeth when they did the transatlantic run. He discovered a "clouded yellow" species on the Queen Mary when she docked at Southampton. I believe it is a *Colias eurytheme*. Is this a unique record of a British species?

It would be interesting to know if there is any conventional wisdom on this subject. Should British status imply unaided entry? If so, how do we know it is unaided, with the amount of travel and traffic there is these days from the continent? Does aided include just settling on a boat and flying on?— JAMES FRADGLEY, The White House, Merley Park Road, Ashington, Wimborne, Dorset BH21 3DB.

Insects associated with sycamore – a plea for information

Although often regarded as rather a "weed" because of its invasive nature and vigorous growth, many insects are associated with sycamore, *Acer pseudoplatanus* Linnaeus. I am trying to compile a comprehensive index of such associations and would welcome reports (detailed or anecdotal, published or not, from rough field notes or just from memory) of any insects or other invertebrates found feeding on sycamore leaves, sheltering or feeding under loose or fungoid bark, or simply crawling on foliage or trunks. I am also keen to discover the past and current distribution of the sooty bark disease, *Cryptostroma corticale*, a fungal infection which kills sycamores and which is characterised by a black sooty powder on and under parts of the dead bark. Have you seen any dead standing sycamores in your neighbourhood? Any information will be much appreciated.— RICHARD A. JONES, 13 Bellwood Road, Nunhead, London SE15 3DE.

***HYPOLIMNAS BOLINA* L. (LEP.: NYMPHALIDAE): RECENT
EVIDENCE OF STATUS OF SUBSPECIES *BOLINA* L. AND
JACINTHA DRURY IN MALAYA**

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PENINSULAR MALAYA has been the scene of invasions by two very different subspecies of *Hypolimnas bolina* over the past century and a half, overland from Thailand and Burma to the north (ssp. *jacintha*) and over sea from the south (ssp. *bolina*). In Malaya the species inhabits gardens, plantations, forest edges and secondary jungle on the plains. The males of the two subspecies are somewhat similar and not unlike those of *H. missipus* L., deep purplish-blue with whitish discal patches on all wings, *jacintha* additionally possessing a series of postdiscal white spots. The females are very different from each other; *bolina* is a magnificent insect, bluish-black with white and orange patches, while *jacintha* is a dull dark-brown with submarginal white spots. It has been suggested that the latter may mimic females of *Euploea* species (Woodhouse, 1950; Corbet and Pendlebury, 1992). I note that for Thailand, Pinratana (1979) incorrectly refers to ssp. *bolina*; the coloured plate correctly depicting *jacintha* is mislabelled.

Corbet and Pendlebury (*op. cit.*) summarise the insect's history in Malaya – in the nineteenth century all specimens observed were of the continental form *jacintha*; towards the end of the century it became increasingly rare, then from about 1930 subspecies *bolina* from what is now Indonesia established itself and became fairly common; later, from about 1970, *jacintha* has partly re-established itself, and has interbred with f. *bolina* to produce hybrids difficult to classify.

During the two years I lived in Malaya from 1957 to 1959, except on one occasion, I did not encounter the species. However, I was residing in the Cameron Highlands at 5000 feet altitude. On 30.v.1959 I visited the mangrove swamps south of Sungei Selangor for the very local *Danaus affinis* Fab. (now a protected species in Malaya). During my short visit I saw several female *H. bolina bolina*, and was fortunate to notice a specimen laying eggs on flowering *Portulaca* which in places covered the embankments. Three eggs found later produced further females in August.

Recently I returned to Malaya and at Kaki Bukit on the Thailand border near Kangar I came across several specimens of the continental subspecies *jacintha*, all males. I failed to see it on the several visits made in January and April when living in Malaya. In January 1995, on leaving Kangar, I moved to Bentong, Pahang, where I found the species common, and both sexes were seen. All these were also of the continental subspecies, and there was no evidence of the presence of ssp. *bolina* or hybridisation. Bentong is almost in the same latitude as Sungei Selangor, but on the east side of the central mountain chain, Sungei Selangor being on the west coast.

Although there is a resemblance between *jacintha* females and some *Euploea* species, very noticeable in set specimens, I found no difficulty in recognising female *jacintha* in flight – the females of *bolina* do not appear to mimic any distasteful model.

My observation would seem to suggest that *jacintha* from the north is now the predominant subspecies as far south as latitude 3°N in Malaya, and that ssp. *bolina* has declined or disappeared to the north of this latitude. The fluctuating colonisation and decline of the two subspecies in Peninsular Malaya and Sumatra is interesting, and perhaps unique. Although best monitored by resident Lepidopterists, it is a phenomenon deserving of attention by visitors to the country which at present has a rational policy regarding collecting and studying insects, having some very rare species protected, to which have been added other species, some quite common, liable to persecution for commercial gain.

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Pinratana, A., 1979. *Butterflies in Thailand*. Vol. 3, Viratham Press.
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Records of *Erebia* butterflies (Lep.: Satyridae) from Europe, 1983-1993

While extracting information from my butterfly collection for the Mapping European Butterflies project (Kudrna, 1996. Mapping European Butterflies: Handbook for Recorders. *Oedippus* 12: 1-60.), I collated several records of European *Erebia* butterfly species collected during 1983-1993 that have not been reported previously in my records of this genus (Wakeham-Dawson, 1992, *Bull. Amateur Ent. Soc.* 51: 163-166; 1992, *Bull. Amateur Ent. Soc.* 51: 289-291; 1995, *Ent. Rec.* 107: 267-271; 1996, *Ent. Gaz.* 47: 247-251 and *in press*). These are listed in Table 1, with information relating to dates, locations, habitats and altitudes of capture. Identification was confirmed by examination of male genitalia using Higgins (1975, *The Classification of European Butterflies*. London). Nomenclature is based on Warren (1963, *Monograph of the Genus Erebia*. British Museum (N.H.)) and Higgins & Riley (1980, *A Field Guide to the Butterflies of Britain and Europe*. Collins).

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Table 1. Species of *Erebia* captured 1983-1993 with collection data

Key:

A Andorra;

EP Eastern Pyrenees

FA French Alps; IA, Italian Alps

S Switzerland

SP Spain

c common

s scarce

| Species | Location | Habitat | Altitude (m) | Date | Notes |
|---------------------------------------|-----------------------------|--------------------|--------------|--------------|--|
| <i>E. euryale</i> Esper | (a) Mt Canigou, (EP) | pine woods | 2200 | 21.vii.1993 | 1 male, wing ocelli absent. |
| | (b) Les Arcs (FA) | pine woods | 2200 | 01.viii.1993 | females polymorphic (see Higgins & Riley, 1980), c |
| <i>E. eriphyle tristis</i> H.-S. | Simplon Pass (S) | sub-alpine pasture | 2000 | 03.viii.1993 | c |
| <i>E. manto</i> [D.&S.] | (a) Cornet de Roselend (FA) | sub-alpine pasture | 1968+ | 01.viii.1993 | c |
| | (b) Albertville (FA) | sub-alpine pasture | 1600 | 01.viii.1993 | c |
| <i>E. manto constans</i> Eiffinger | Aulus-les-Bains (EP) | sub-alpine pasture | 1600 | 27.vii.1993 | c |
| <i>E. epiphron</i> ?fauveaui de Lesse | (a) Mosset, Prades (EP) | hay meadows | c1200 | 15.vii.1990 | c |
| | (b) Ax-les-Thermes (EP) | sub-alpine pasture | 2200 | 27.vii.1993 | c |
| | (c) Aulus-les-Bains (EP) | sub-alpine pasture | 1600-1700 | 27.vii.1993 | c |
| | (d) Mt Canigou, (EP) | scree slopes | 2400 | 28.vii.1993 | s |
| <i>E. epiphron aetherea</i> Esper | Les Arcs (FA) | sub-alpine pasture | 2300 | 01.viii.1993 | c |
| <i>E. pharte</i> Hübner | Les Arcs (FA) | pine woods | 2200 | 01.viii.1993 | c |

Table 1. Continued

| Species | Location | Habitat | Altitude (m) | Date | Notes |
|--|-------------------------------------|----------------------|--------------|---------------|--|
| <i>E. melampus</i> Fuessli | (a) Cornet de Roselend (FA) | sub-alpine pasture | 1968+ | 01.viii.1993 | c |
| | (b) Les Arcs (FA) | pine woods | 2200 | 01.viii.1993 | c |
| <i>E. aethiops</i> Esper | Albertville (FA) | sub-alpine pasture | 1600 | 01.viii.1993 | females polymorphic (see Higgins & Riley, <i>op. cit.</i>). c |
| <i>E. triaria hispanica</i> Gumpenberg | Serrania de Cuenca (SP) | clearings/pine woods | 1200-1400 | 01.vi.1993 | males only, c |
| <i>E. alberganus</i> de Prunner | (a) St Agnan en Vercors (FA) | pine woods | c1000 | vii.1983 | s |
| | (b) Eggental (S) | pine woods | c1500 | vii-viii.1993 | s |
| <i>E. aethiopella</i> Hoffmannsegg | Colle de Piccolo S.Bernado (IA) | sub-alpine pasture | 2100+ | 02.viii.1993 | at snow-line, s |
| <i>E. mnestra</i> Hübner | (a) Les Arcs (FA) | scree, rocky slopes | 2600 | 01.viii.1993 | s |
| | (b) Colle de Piccolo S.Bernado (IA) | sub-alpine slopes | 2100+ | 02.viii.1993 | s |
| <i>E. gorgone</i> Boissduval | (a) Ax-les-Thermes (EP) | sub-alpine pasture | 2000 | 27.vii.1993 | s |
| | (b) Pic del Griu (A) | sub-alpine pasture | 2600+ | 29.vii.1993 | s |
| <i>E. tyndarus</i> Esper | Simplon Pass (S) | sub-alpine pasture | 2000 | 03.viii.1993 | c |
| <i>E. cassioides cassioides</i> Hohenwarth | (a) Cornet de Roselend (FA) | sub-alpine pasture | 1968+ | 01.viii.1993 | c |
| | (b) Colle de Piccolo S.Bernado (IA) | sub-alpine pasture | 2100+ | 02.viii.1993 | c |
| <i>E. cassioides arvernensis</i> Oberthur | (a) Mt Canigou (EP) | rocky slopes | 2400 | 28.vii.1993 | s |
| | (b) Andorra | sub-alpine pasture | 2600-2800 | 29.vii.1993 | widespread, c |
| <i>E. lefebvrei pyrenaica</i> Oberthur | Mt Canigou (EP) | scree, rocky slopes | 2400 | 28.vii.1993 | above tree-line, s |
| <i>E. montana</i> goante Esper | Simplon Pass (S) | sub-alpine slopes | 2000 | 03.viii.1993 | s |
| <i>E. oeme oeme</i> Hübner | Aulus-les-Bains (EP) | sub-alpine pasture | 1600 | 27.vii.1993 | s |
| <i>E. meolans</i> de Prunner | (a) Mosset, Prades (EP) | woods, meadows | 1200 | 15.vii.1990 | c |
| | (b) Mt Canigou (EP) | pine woods | 1500 | 28.vii.1993 | c |
| <i>E. pandrose</i> Borkhausen | (a) Les Arcs (FA) | scree, rocky slopes | 2600+ | 01.viii.1993 | s |
| | (b) Colle de Piccolo S.Bernado (IA) | sub-alpine pasture | 2100 | 02.viii.1993 | at snow-line, s |

**A PROVISIONAL HISTORY OF *STRANGALIA* (*PEDOSTRANGALIA*)
REVESTITA (L.) (COL.: CERAMBYCIDAE) IN ENGLAND**

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STRANGALIA REVESTITA is a very, very rare British Longhorn beetle. It is also a very odd one. It shares one characteristic with the crepuscular Weaver Beetle *Lamia textor* L. – elusiveness; but unlike the latter, which is furtive and secretive, and has not been seen in this country for over forty years, it is diurnal, prefers hot sunshine, and may be described as almost flamboyant by nature, for it is brightly coloured – red head, pronotum and legs, black elytra with a metallic blue sheen and, more often than not turns up quite unexpectedly like a jack-in-a-box on open land (Kaufmann, 1992). This happens so infrequently – three examples since the third year of the Great War (1917) at approximately quarter-century intervals in 1945, 1971 and most recently 1996 – that this has led, in a sense, to its own protection, for it is not on the vulnerable/at risk list (Shirt, 1987). The subfasc female in contrast is even more rarely encountered; there are hardly any examples in our museum collections.

This, however, is to anticipate.

Strangalia revestita is an indigenous insect which must have been known to our entomologists at least as early as the penultimate decade of the 18th century, for it is depicted by Martyn (1792, pl. 27, f.1). In 1802, Marsham describes it precisely, habitat unknown, a specimen being “In mus. D. Beckwith”. Furthermore, he also accounts for *Leptura* (*Strangalia*) *fuscicornis*, a description which adequately fits the female, although this has since been synonymised with the var. *rubra* Geoffr. (Daniel, 1904; Aurivillius, 1912; Villiers, 1978). Marsham’s *L. fuscicornis* was “In mus. D. Lewin”. *S. revestita* is referred to briefly by Turton (1806); Samouelle (1819) merely gives July as the month in which it occurs. This is rather late as the beetle more usually chooses to appear in June.

S. revestita has always been a scarce native, but the published evidence shows that it was slightly less uncommon during the early part of the 19th century, a period of which collectors took full advantage to comb its few known haunts in Berkshire, Cambridgeshire and Kent, for by early Victorian times it was already a rare and prized specimen.

The sexes are dimorphous, the bulkier female being overall yellowish-brown superficially and black underneath. Something of a rôle reversal, at least among our Cerambycids, as, for example, with *Strangalia melanura*, it is the female which is generally more brightly red and, where *Leptura rubra* and *L. sanguinolenta* are concerned, it is the male which is yellowish and the female red. Stephens (1831, 1839) distinguishes between the sexes as does Fowler (1890). Planet (1924) figures both, but unfortunately, a printer’s error has transposed the sex legends.

Stephens (*op. cit.*) possessed "specimens of this rare species, which were captured in Coombe-wood, and others found in the vicinity of Windsor". There are four of these beetles in his collection, one of which is a female. He adds that *S. revestita* was once taken by Rev. L. Jenyns in Gamlingay ([Cambs.] – this example is still extant) and two other localities where it was found, namely "Near Colney-hatch-wood – Mr A. Ingpen" (Middlesex) and "Windsor – Dr (W.E.) Leach". These data are summarised in Stephens' later work (1839), which adds "Flowers & c. ... 6." (June). John Curtis in his 1837 catalogue, evidently had a specimen of British origin in his collection, number 415 - 1.

Coombe Wood, Surrey, a favourite collecting ground of Stephens and so often referred to by him, still exists, albeit greatly reduced and fenced in, now forming part of a golf links situated south of Coombe Lane, precisely as Stephens (1831) stated: "... in the lane behind Coombe-wood leading from Kingston to Merton".

S. revestita, a singleton, was beaten from an oak in June, 1843 at Hainault, Essex (Norman, 1844); this record is of some significance, as will be later explained, as is another record of the beetle, found in similar circumstances the following century near Ringwood, Hampshire. Nothing more is heard of this insect until twenty years later when another was captured at Darenth, Kent, in June 1862 by J. Scott (Rye, 1863). There is an existing example simply labelled "E.C. Rye" in one museum collection, but nothing further to indicate that it is a Scott specimen from the above locality. On the other hand, the latter was fortunate enough to find a few more *revestita* in the Darenth Woods and they have found their way through purchase by Jansons into other collections, including one example marked "J. Scott" which circumstances imply that it, too, was taken in Darenth (Allen, 1972).

There is a short description of this beetle in Cox (1874) noting its variability in coloration and that it is rare. Turning now to Fowler (1890), sexual characteristics are detailed only as to the antennae, together with comments on the differing colour forms. He adds, "On flowers; very rare" and then repeats the information given by Stephens (1831, 1839), and these additional localities: Birch Wood (Kent), (S. Stevens) – an example from there has been traced, but captured by F. Smith – and Darenth Wood (S. Stevens). Fowler states further that there is one specimen without locality in Dr Power's collection. There are in fact no less than four, all *sine datis* in that collection.

Canon Fowler's own collection contains a single specimen of *S. revestita* bearing an encrypted label, "7.91"; unfortunately, he left no key to this code, but an educated guess suggests that the numerals refer to the date – July, 1891. Nevertheless, one must be wary of making what might be a fallacious assumption, witness Waterhouse's purchases (*infra*), also numbered similarly, but for which the latter left some detailed notes.

Nothing more is heard of this still enigmatic British species until this century when P. Harwood captured one from off a flower-head on 20 June 1909 in Harewood Forest, near Andover, Hants. (Rowland-Browne, 1910; Kaufmann, 1948; Allen, 1972). A record of the above capture is repeated by Fowler (1922), who at the same time published another new record for the beetle, found in June 1917 in the New Forest by C. Gulliver (Kaufmann, 1948; Allen, 1972). In fact, A. Ford, the dealer/collector, had already taken *S. revestita* in June 1908 in the Burley Woods, Ringwood, Hants., by beating it off oak; his specimen has been traced (see below).

There are two data-less examples, representing each sex, in the Dale collection, "both much broken", according to Walker (1932). However, a recent examination in 1996 of this pair reveals that they are in better condition than the late Commander Walker wrote.

Donisthorpe (1939) states that the beetle was found in Windsor Forest by T. Desvignes, an eminent entomologist, whose collections were sold at one of the Stevens auctions in 1868. It was reputedly bought by E.W. Janson, according to a member of the family, and then re-sold to that great Coleopterist, George Crotch. When in turn Crotch's huge collections were sold, it supposedly found its way into the Cambridge or Oldham collections. It is in neither, although both museums acquired portions of Crotch's materials, and has not been traced. Crotch certainly bought several *S. revestita* at one time or another, for these are to be found in other hands, but the Desvignes record raises some doubt as to its authenticity.

At this point it is appropriate to discuss the place-name, Coombe, which occurs in many counties, and its association with Henry Harding of Dover, a contemporary of Stephens, the Dale family and many other famous Coleopterists to whom he sent beetles, represented in a number of collections. Stephens differentiates between Coombe Wood and Coombe, at present a built-up part within the administrative area of Malden, Surrey, a few miles south-west of the Wood; but there is another Coombe, in East Kent, within the rural district of Eastry, some miles north of Dover and where Harding may well have collected, for he was active in these surroundings. An example of *S. revestita* taken by Harding, but unfortunately lacking details, was bought by O.E. Janson at a Stephens sale in 1873; it has been found. It is tentatively suggested that this specimen is a Kent rather than a Surrey one.

After 1917 there is a long silence before *revestita* emerges literally once more into the daylight. The story has been told before (Allen, 1972; 1993), but it is so amusing that it bears repetition. On 17 June 1945, the Rev. C.E. Tottenham was sweeping the verges of a lane in Croydon cum Clapton, Cambs., not far from Gamlingay (where Jenyns had found it in the Spring of 1829), watched – and perhaps questioned – by a boy. Rev. Tottenham, no doubt slightly exasperated by his onlooker, handed his net to him, telling him to try his luck further down the lane. This the boy did, returning

presently to hand back the sweep net, and, behold, crawling up its side intent upon escape was a female *S. revestita*. Beginner's luck, indeed! This specimen was later presented to the Natural History Museum.

At some time during the early 1950s a collector was credited with the capture of this species in White Wood, Everton, Beds. (Driscoll, 1977; Harding, 1978; Hyman & Parsons, 1992). This is an erroneous record, recently confirmed as such in writing by the person in question, and hence is to be deleted from the distribution lists.

In June 1971, Mr G.E. Woodroffe caught a single *revestita* walking along a sandy heathland track on Hankley Common, near Thursley, Surrey (Allen, 1972; Kaufmann, 1988, 1992). This is not the only occasion that the beetle has shown itself well in the open and, as will be explained, is of some significance.

Lastly, a male of this extraordinary *Strangalia* was found at midday in June 1996 crawling along some bare ground in parkland near Coventry, Warwickshire by Dr T.G. Forsythe. The find confirms an irretrievable pre-1947 record from the county (Kaufmann, 1948; Allen, 1972; Forsythe, 1997).

Other British examples of *S. revestita*, not dealt with above, will be found in the annotated summary.

Earlier, reference has been made to numbered codes, which apply, for instance, to a specimen marked "23.62" in the G.R. Waterhouse collection and would be wrongly interpreted as being a precise date. It is a sequential number indicating the acquisition of a number of beetles, subsequent to a purchase from a J.A. Brewer (another contemporary), who had bought certain lots at a Stevens auction in the 1860s. This small collection contained a single *S. revestita*, data-less, but as Brewer lived in Reigate, it is conceivably a Surrey beetle. There is a second specimen in the collection, more clearly defined in Waterhouse's notebooks, again bought off Brewer in March 1863, who had similarly acquired it at a Stevens sale that month. As is so often the case with many of these earlier captures it is frustrating that data labels have disappeared or that locality records cannot be found.

Strangalia revestita is listed in all the British catalogues published since 1819 as a native beetle save, strangely, in the Waterhouse Pocket Catalogue of 1861 – of all people – for he names it as an indigene in his earlier Catalogue of 1858, and by Beare and Donisthorpe's Catalogue of 1904, who omit it altogether.

The life history and bionomics of the insect are still unknown in this country and, indeed, that was the case abroad until the mid-1980s (Hellrigl, 1986). Beyond finding the imagines, the larval and pupal stages remained a mystery (Duffy, 1953; v. Demelt, 1966; Villiers, 1978; Klausnitzer and Sander, 1981). Duffy (1953) suggested that the host plant was *Prunus avium*, echoed by Hickin (1987). There is a host of others (Bense, 1995), and a short list of flowers visited by the perfect insect, although it is not a true florivore,

such as *Cornus*, *Crataegus* and *Rosa canina*. Villiers (1978) also gives umbellifers, those strongly-scented plants so favoured by the genus *Strangalia*, but Hellrigl (*op. cit.*) categorically denies this in his experience – and he should know, he collected hundreds of the species!

The males always outnumber the females in the ratio 4:1 and since both sexes largely frequent the canopies of their host trees, this may explain their rare incidence – at least with us – at ground level. *S. revestita* has become rarer and more localised on the Continent (Freude, Harde and Lohse, 1966; Villiers, 1978; Klausnitzer and Sander, 1981), but remains widespread, ranging from Scandinavia, throughout the Mediterranean countries and as far east as Transcaucasia (Bense, 1995). The many different colour forms displayed more particularly by the male are both illustrated (Bijiaoui, 1986) and described (Daniel, 1904; Aurivillius, 1912). Villiers (1978) names no less than sixteen varieties.

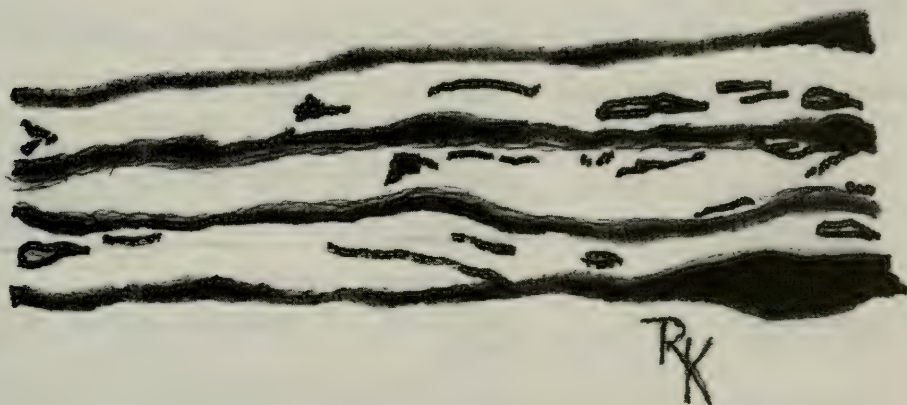


Fig. 1. Small stripped oak branch with enveloping scar healing tissue.

S. revestita has been recorded from the following host trees: beech (*Fagus*), birch (*Betula*), elm (*Ulmus*), hornbeam (*Carpinus*), maple (*Acer*), oak (*Quercus*), plum (*Prunus*), poplar (*Populus*), sour cherry (*Prunus avium*), sweet chestnut (*Castanea*) and walnut (*Juglans*), not to mention some other growths unlikely to be found in this country. It is the considered view that of all the above trees the oak bears the closest attention, as already commented upon.

A great deal more is now known about the appearance and structure of the *revestita* larva and how to distinguish it from the five species of *Pedostrangalia* (*Strangalia auctt. Brit.*), outside the scope of this account (Svacha and Danilevsky, 1989), but their morphological information remains incomplete: neither mating, ovipositing nor the egg is described, and the shape of the pupa is un-illustrated.

Hellrigl (*op. cit.*) and Bense (1995) explain precisely in what parts of the host plant the larval and pupal stages occur (see Fig. 1).

The polyphagous larva of *S. revestita* develops preferably in trees on the edges of woodlands and in those isolated in wide areas, such as are found on estates and parks. They feed in the thinner branches, more particularly in those whose bark has been excoriated or otherwise damaged, round the scars of which the parent tree produces an overlapping healing skin; the larva eats into this crust as well as boring into the remaining living part of the branch. When this dies, breaks off and lies rotting on the soil, the larva continues undisturbed; its presence may be detected by the colour of the frass it leaves behind, which turns from a pale to darker brownish shade. It also occurs in decaying tree stumps and fallen dead branches, provided they are still moist. The life cycle lasts from two to three years, pupation taking place in the wood. The imagines emerge usually in April and have been collected as late as August but, as has been related, June seems the most usual month of capture.

Specimens which have been examined and researched are as follows:

- | | |
|---------------------------------|--|
| Natural History Museum, London: | 4 spp. <i>in coll.</i> J.F. Stephens, data-less. 4 spp. <i>ex coll.</i> J.A. Power, <i>sine datis</i> . 1 sp. <i>in coll.</i> G.C. Champion, <i>ex coll.</i> G.R. Crotch. 1 sp. <i>in coll.</i> G.C. Champion, purchased at a Stevens sale. 1 sp. presented Tottenham (<i>supra</i>). |
| Royal Museum of Scotland: | 1 sp. <i>in coll.</i> G.R. Waterhouse, probably <i>ex</i> J.A. Brewer. 1 sp. <i>in coll.</i> G.R. Waterhouse, bought from Brewer, who had bid for it at a Stevens auction in March 1863. |
| National Museum of Wales: | 3 spp. <i>ex coll.</i> A.E. Gardner, without data and doubtfully British. |
| Manchester Museum: | 1 sp. (A. Ford), <i>ex coll.</i> J. Kidson-Taylor. 1 sp. <i>ex coll.</i> T.H. Edmonds, no other data and possibly foreign. |
| Hope Dept., Oxford: | 2 spp. <i>in coll.</i> Dale. |
| University Museum, Cambridge: | 1 sp. <i>ex coll.</i> Rev L. Jenyns. 1 sp. Darenth Wood (J. Scott) WK (West Kent). <i>ex coll.</i> O.E. Janson. 1 sp. "1082" <i>ex coll.</i> O.E. Janson. Labelled "Harding collection, sold at Stevens' April 17th, 1873". 1 sp. <i>ex coll.</i> G.R. Crotch, 1844. 1 sp. <i>ex coll.</i> G.R. Crotch. |
| Castle Museum, Norwich: | 1 sp. <i>in coll.</i> J. Edwards, perhaps British, <i>sine datis</i> . |

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|------------------------------|--|
| Bolton Museum: | 2 spp. unlabelled (British?). 1sp. labelled only "E.C. Rye". |
| Merseyside Museum: | 1 sp. <i>in coll.</i> B.S. Williams, Birch Wood (Fredk. Smith). |
| Doncaster Museum: | 1 sp. "10", but questionably British. |
| Bristol Museum: | 3 spp. <i>in coll.</i> F.C. Adams. Data-less. He was a well-known New Forest entomologist. |
| Nottingham Museum: | 1 sp. <i>in coll.</i> W.W. Fowler, coded "7.91" and with a yellow tag. |
| Glasgow Museum, Kelvingrove: | 2 spp. un-labelled and of unknown origin. |
| Hunterian Museum, Glasgow: | 7 spp. (no data). 1 sp. Brockenhurst, (New Forest) June, 1917. |

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Hazards of butterfly collecting – Driven out by drivers – Ghana, 1993

The forests on the Atewa Range at Kibi in Ghana are among the finest survivors of one of the most threatened habitats in the world, the true West African rainforest. They are of especial beauty since they stretch over rolling hills which – with peaks of 850 metres or so – are higher than most in West Africa. I was very pleased that my first serious collecting trip as part of a five-year research project into West African butterflies was a weekend at Kibi – my last visit there in 1977 had been sheer delight.

Two four-wheel drive vehicles were loaded up with two British Army majors, one butterfly researcher, their respective wives, an impressive amount of food and drink, as well as a generous supply of British Army impedimenta such as tarpaulins, camp beds, furniture and ingenious cooking devices. We were planning to sleep in the forest overnight.

Kibi did not disappoint us. Though early in the season, with really good rains still to fall, no less than 160 species were chalked up in two days, including great rarities such as two beautiful Swordtails *Graphium illyris* Hewitson and *G. latreillanus* Godart. I also took a Dotted Border *Mylothris atewa* Berger, a species named after the very ridge on which we were camping. I have seen no references to this species except for the type series, described by Berger as recently as 1980. We did not, alas, see *Papilio antimachus* Drury, Africa's largest butterfly, which is found there.

Darkness comes early in the rainforest, so there was time for a splendid dinner, drinks and talk, as well as visits to a moth-screen that, unfortunately, did not produce moths as well as the day had produced butterflies. Soon the army issue camp beds were assembled, and we retired to sleep in various corners of the camp.

I still remember how surprised I was when I first realised that in many rainforests it is possible to sleep undisturbed in the open, without mosquito nets to keep away the hordes of noxious insects that seem to figure so prominently in books of the early explorers. The Kibi forests are one of those places, and soon six tired campers were fast asleep. Until two o'clock, that is.

Nancy and I woke up when driver ants began to bite. The light of the full moon revealed that the ground beneath the camp beds was a seething mass of ants which had fanned out to feed, and which had only just begun to ascend the beds. One of the expedition cars was smothered in ants, inside as well as outside. One lucky couple was out of the ants' range, enjoying the privilege of seeing the rest of us in various stages of undress, trying to retrieve our beds and our kit while fending off as many ants as possible. Once fifty or so ants are biting at the same time, it becomes almost impossible to act rationally. We fled a few hundred metres down a forest path and regrouped. Nancy's shoes were left behind in the confusion. I volunteered to pick them up – after all, the idea of camping out in the open was mine, and Nancy is not a naturally outdoorsy type.

The shoes were covered in ants, though by the time I reached the beds most of them had been dislodged by banging the shoes together. This had also scattered Nancy's watch, earrings, necklace and other sundries placed in the shoes, but a solution for that would have to wait for dawn.

Ten minutes of mutual grooming and inspection of beds allowed us to declare an ant-free-zone, and we bedded down for another three hours of sleep.

Dawn permitted us to retrieve Nancy's trinkets and revealed that the ants had largely departed, leaving just a hundred thousand or so clinging as an intertwined ball to our garbage bags. The opportunity for sweet revenge was there! Nancy was given the honour. Kerosene was poured over the ants. The first match fizzled out. The second produced a fireball large enough to singe Nancy's hair and eyebrows. It had been petrol, not kerosene, that I had poured over the ants, most of which survived at least as well as Nancy.

Ghanaians, and not just city folk, share a deep distrust of the forest as a place of wild animals and evil spirits. Had anyone been at Kibi at 02.00 on Monday 8 March 1993, they would have been confirmed in their beliefs.

— TORBEN B. LARSEN, 358 Coldharbour Lane, London SW9 8PL.

Two *Dipogon subintermedius* (Magretti) (Hym.: Pompilidae) apparently developing on one spider

I was interested to read Steve Garland's note (*antea*: 141), describing the behaviour of *Dipogon subintermedius* in hunting its regular (cf. Day, 1988: *Handbks. Ident. Br. Insects* 6(4): 31) spider prey *Segestia senoculata* (L.). It prompts me to record that on 8.iv.1997 I collected two very unevenly sized cocoons of *D. subintermedius*, positioned outward of the remains of a single large spider that seems compatible with *S. senoculata*, from one of several characteristic emergence holes of the large buprestid beetle *Agrilus pannonicus* (Piller & Mitterpacher) seen in the bark of a standing mature *Quercus robur* at Silwood Park, Ascot, Berkshire. Because the cocoons were immediately recognised as probably those of a pompilid (which normally develop in strict one-to-one relation to their spider prey), I looked carefully for the remains of a second spider but could find nothing. The conclusion that on this occasion two wasps had, for some unknown reason, developed on a single spider was strengthened by the abnormally small size (3mm long) of the male *D. subintermedius* that emerged on 11.v.1997, to be followed by a more normally-sized female (7mm long) eight days later.— MARK R. SHAW, National Museums of Scotland, Chambers Street, Edinburgh EH1 1JF.

BUTTERFLIES IN THE BENASQUE VALLEY, SPAIN

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Introduction

THE BENASQUE VALLEY lies in the Spanish Pyrenees between the Ordesa National Park to the west and the Vall d'Aran to the east. The area was visited in May 1991, June 1994 and July/August 1991 and 1993 to investigate the butterfly fauna. The spring butterflies have already been described (Wakeham-Dawson, 1992a), as have the *Erebia* species found flying in July/early August (Wakeham-Dawson, 1992b). The current paper reports on butterflies seen during a visit to the valley between 22 and 29 September 1996 (Appendix 1), but also discusses some of the more interesting species that fly earlier in the year. During the September visit, the weather was warm and dry and the leaves had not begun to change colour or fall. Snow was lying on the peaks of the taller mountains. A farmer's wife at Chia reported that it had been a very wet summer in 1996.

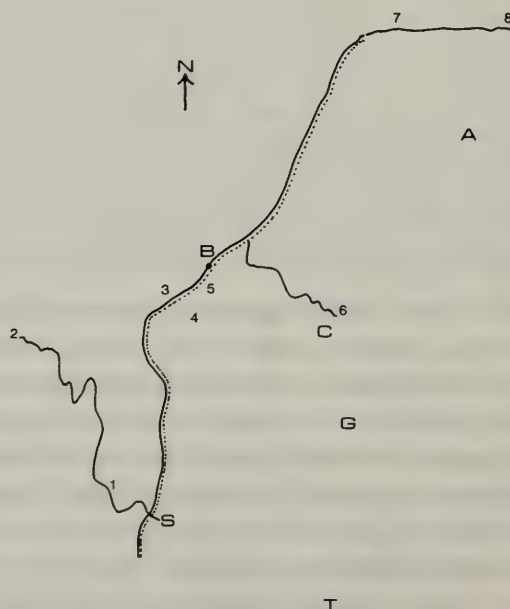
Habitat types

The Benasque Valley is cut by the River Esera (Fig. 1). Initially the Esera flows east to west fed by streams from mountains in the Maladeta range (which includes Pico de Aneto), but then turns south. Between the towns of Benasque and Castejón de Sos (c. 14 km), the valley floor is at c. 1000m above sea level. The valley sides are steep and rise to high mountain peaks such as Pico de Aneto (3404m), El Gallinero (2728m), El Turbón (2492m) and Pico de Cerler (2407m). Vegetation is stratified up the valley sides providing a range of habitat types that support a rich flora and associated butterfly species (some of which are endemic to the Pyrenees). The vegetation can be classified into five main habitat types (not including the alpine habitat of high mountain peaks). These are listed here with an indication of the altitude ranges in which they occur. These habitats can be found throughout the Benasque Valley and similar valleys in the region, but a number of areas which are good examples of each type are given below.

1. Terrace meadows (1000 - 1400m) along the banks of the Esera and on the lower valley slopes. These meadows (and the sub-alpine pastures discussed below) have developed a rich flora and fauna through extensive hay making and grazing with farm livestock over the last thousand years. A moderate intensity of grazing or mowing keeps the vegetation at a height and diversity which suits many lepidopteran communities (Montesinos, 1994). However, changes in farming practices which lead to the abandonment of traditional pastoral systems (often accompanied by under- or over-grazing) or to the introduction of more intensive management methods (especially the

use of artificial fertiliser to improve agricultural productivity) are endangering mountain meadows throughout Europe (Bignal & McCracken, 1992). In the Benasque Valley, some of the larger meadows have been subjected to mechanical mowing and fertiliser application which has resulted in a poor flora, often dominated by sown agricultural grass species. However, around the villages of Eriste and Anciles the meadows are too small or steep for 'improvement' of the grassland. Even in late September, there were many plants still in flower and butterflies including *Erebia neoridas* Boisduval, *Colias alfacariensis* Ribbe, *Hesperia comma* L. and very worn *Agrodiaetus damon* D. & S. In June and July, *Maculinea arion obscura* Christ and *M. alcon rebeli* Hirschke (Wakeham-Dawson, 1996) had been flying. *Gentiana cruciata*, the *rebeli* larval food plant, had been in flower. By September, the blue flowers had been replaced by seedheads full of small seeds and the leaves were yellow and weathered. A number of plants still had white *rebeli* eggs at the base of the seedheads and on the smaller leaves at the top of the plants. These were dead and inspection under a x10 lens showed no sign that larvae had hatched from them. Perhaps these eggs had been infertile or killed by the very wet summer that the valley had experienced in 1996.

Figure 1. Sketch map of the Benasque Valley. A. Pico de Aneto (in the Maladeta Range); B. Benasque town; C. Pico de Cerler; G. El Gallinero; S. Castejon de Sos; T. El Turbon. 1. Chia; 2. Collado de Sahún; 3. Eriste; 4. Els Plans d'Abajo; 5. Anciles; 6. El Ampriu; 7. Hospital de Benasque; 8. La Besurta. Solid line with dotted line = main road running along River Esera; solid lines = other roads. See text for indication of scale.



Other July lycaenids included *Pseudophilotes baton baton* Bergstrasser and a type of *Aricia* species. Some specimens (of both sexes) collected resemble *Aricia allous* Geyer from the Parnon Mountains and Mount Veluchi in Greece (Wakeham-Dawson, *antea*: 199-203) and have no orange markings on the upper forewings. Others have reduced orange markings like the male *montensis montanabella* Verity from central Spain illustrated in Manley & Allcard, 1970 (plate 31), but none of them have the pronounced orange markings found in *montensis montensis* Verity from North Africa (Tennent, 1996: plate 12). The Benasque population may be an example of the intermediate form of *allous* and *montensis* reported from areas of Greece, North Spain, Pyrenees and south-west Alps (Coutsis, 1972; Higgins, 1975; Higgins & Riley, 1980; Leestmans & Arheilger, 1987). Male genitalia distinguish the Benasque *allous x montensis* from *agestis agestis* D.&S. (Higgins, 1975: Fig 178) found north of the Pyrenees and *agestis cramera* Eschscholtz (Higgins, 1975: Fig 178) from central Spain. However, there appears to be little to distinguish between the genitalia of Benasque *allous x montensis* and Greek *allous* (which resemble Fig 179b in Higgins, 1975). Neither *A. agestis agestis* or *agestis cramera* were found in the Benasque valley. Also flying in the meadows in July were *Heodes alciphron gordius* Sulzer, *Agrodiaetus escheri escheri* Hübner, *Mellicta parthenoides* Keferstein, *Melitaea didyma meridionalis* Staudinger and *Satyrus ferula* F.

2. Dry scrub (maquis) at c. 1200m. Around the village of Chia on the road up to the Collado de Sahún, the scrub includes oak (*Quercus*), box (*Buxus*), blackthorn (*Prunus*) and lavender (*Lavandula*). Between July-August, *A. damon*, *Coenonympha dorus* Esper and *Hipparchia semele cadmus* Fruhstorfer fly in the area, accompanied by the western European satyrids that live in dry scrub. In May/June *Glaucopsyche melanops* Boisduval were found. In late September, very worn *Hipparchia statilinus* Hufnagel were present with worn *E. neoridas*. *Clossiana dia* L. (a species which appears to be triple brooded in the Benasque valley) was very fresh and a single mint male *Gonepteryx cleopatra* L. was seen.

3. Deciduous woodland between 1000-1500m. Around Eriste, Anciles and throughout the valley, the woodland was rich with butterfly species in July. These included *Erebia meolans* de Prunner, *Limenitis reducta* Staudinger, *Apatura ilia* D.&S. and *Laeosopis roboris* Esper. In Late September, all woodland species were worn and included *E. neoridas*, female *Quercusia quercus* L. and a single female *ilia*.

4. Coniferous woodland 1300-1800m. The denser areas of coniferous woodland did not support butterflies, but new plantations, clearings and pasture just above the tree-line had a number of interesting species. In rocky pasture (c. 1600m) on the edge of pines at Els Plans d'Abajo (across the reservoir east from Eriste), *Melanargia russiae cleanthe* Boisduval

(Wakeham-Dawson, *in press*) were flying with *Hipparchia alcyone* D.&S., *Boloria pales pyrenesmiscens* Verity and *Parnassius apollo* L. in July. *Erebia triaria triaria* de Prunner were flying in the area in late May.

5. Sub-alpine slopes (above 1600m). This was the most interesting habitat type providing two types of terrain: (a) steep pasture and (b) scree slopes (at lower altitudes often interspersed with pine trees).

(a) On pasture at El Ampriu (1900m) in July, *Erebia hispania rondoui* Oberthur were flying with *Colias phicomone* Esper and *Heodes virgaureae* L. *E. rondoui* was still flying in mid-August. In July, at the Collado de Sahún (1900m), *Erebia gorgone* Boisduval and *E. epiphron pyrenaica* H-S were flying close to the short grass on very steep slopes. By late September there was no sign of any butterflies at either site, but at c. 1800m on the road to Plan west of the Collado de Sahún, mint condition *hispania rondoui* (males and females) were found flying with fresh *E. neoridas* on rocky slopes among the pine trees on 27 September. The wing colour and male genitalia of these *rondoui* were similar to those from El Ampriu in July. It appears that the flight period of *rondoui* is much longer than suggested by Higgins & Riley (1980), unless the population at the Collado de Sahún had been unusually affected by the wet summer in 1996. In September, a colony of *E. neoridas* was flying close to the ground on south facing slopes above Cerler (1600m). This species appears to fly in all the habitat types listed above, but females were more common here than elsewhere. These were basking on warm areas of bare soil and some were crawling among the grass stems, but none was observed to lay eggs.

(b) In July, on rocky slopes in the valley around the Hospital de Benasque (1760m) *Erebia euryale* Esper were flying among the pine trees where *Parnassius mnemosyne mnemosyne* L. had been flying in June. Above the tree line in July were *E. lefebvrei lefebvrei* Boisduval and *E. gorge ramondi* Oberthur. *Polymmatos eros* Ochsenheimer were present here on the lower slopes and high up near the Portillon de Benasque (2444m) were fast flying *Pontia callidice* Hübner. In late September, worn *E. neoridas* and fresh *E. pronoe glottis* Fruhstorfer were flying near streams on a south slope in clearings among the pine trees at La Besurta (1900m). Warren (1963) suggests that *pronoe* tends to be overlooked because of its late flight period. One of the male *pronoe* captured was smaller than the others and marked like *pronoe vergy* Ochsenheimer (Higgins & Riley, 1980: plate 53). The genitalia (valves) also differ from those of the *glottis* specimens. The *glottis* valves from Benasque are variable in structure but resemble those drawn for *pronoe pronoe* from Austria by Higgins (1975: fig. 346a), while the *vergy* genitalia from Benasque are similar to those drawn for *vergy* from

Switzerland by Higgins (1975: fig. 346b). In the Benasque *vergy* specimen, the distal section of the valve is less elongated and the mid-costa teeth less pronounced than in the *glottis* specimens. Higgins & Riley (1980) record that some races of *pronoe* show intermediate characters between the subspecies *pronoe*, *glottis* and *vergy*, but the appearance of two distinct forms in one population in the Benasque Valley is surprising.

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Correction: In the spring report of Benasque butterflies (Wakeham-Dawson, 1992a), *Pyrgus alveus* should read *P. malvae* L. and *P. foulquieri* should read *P. carthami* Hubner. In the list of species *Lysandra coridon* should read *L. hispana* Herrich-Schaffer and *Agrodiaetus escheri* Hübner should be included in the list.

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Appendix 1. Species of butterfly seen in the Benasque Valley between 22-29 September 1996.

All species were worn unless marked *. This indicates that adults appeared to have recently emerged. Both sexes were seen unless otherwise stated.

Papilionidae

Papilio machon L. * (females)

Parnassius apollo L. (single female with sphragis)

Pieridae

Pieris brassicae L. *

Artogeia rapae L.

Colias hyale L.? *

C. alfajariensis Ribbe *

Gonepteryx cleopatra L. * (single male)

Lycaenidae

Quercusia quercus L. (females)

Lycaena phlaeas L. *

Lampides boeticus L. * (single male)

Agrodiaetus damon D.&S.

A. escheri Hü.bner * (single female)

Lysandra coridon Poda

L. bellargus Rottemburg *

Polyommatus icarus Rottemburg *

Nymphalidae

Apatura ilia D.&S. (single female)

Nymphalis antiopa L. *

Inachis io L. *

Vanessa atalanta L. *

Cynthia cardui L.

Aglais urticae L. *

Argynnis paphia L. (a single female)

Issoria lathonia L. *

Clossiana dia L. * (third brood)

Mellicta deione Geyer * (second brood)

Satyridae

Hipparchia semele cadmus Fruhstorfer * (a single male in Benasque town centre)

H. statilinus Hufnagel (females)

Erebia hispania rondoui Oberthur *

E. pronoe glottis Fruhstorfer *

E. neoridas Boisduval * (some worn)

Pyronia tithonus L.

Coenonympha pamphilus L.

Pararge aegeria aegeria L. *

Lasiommata megera L. *

L. maera f. adrasta Illiger *

Maniola jurtina L. (females)

Hesperiidae

Spialia sertorius Hoffmannsegg *

Hesperia comma L. *

Notable Lepidoptera from Barking, Essex

On 4.viii.1990, 29.vii. 1992 and 5.viii.1992 two mercury-vapour (m.v.) lights (one Robinson trap and one over a sheet) were operated at Thames-side Park, Barking, South Essex, VC18 (OS grid reference TQ 4682). The site, adjacent to the River Thames, was much disturbed in the past, being used as repository for the pulverised fuel ash (PFA) generated by the nearby Barking Power Station (now demolished). The PFA, mixed with water, was pumped into a number of man-made "lagoons" which, since the closure of the power station in the 1960s, have dried out to varying degrees. A varied vegetation structure has developed with dry, damp and water-logged grassland, Birch *Betula* and Willow *Salix* scrub, areas of bare ground and an extensive network of ditches, of varying widths, dominated either by *Phragmites*, *Typha* or both.

The m.v. lights were operated in an open area, sheltered by Birch/Willow scrub and in close proximity to a ditch dominated by *Phragmites* with some *Typha*. The following moths, considered to be nationally scarce (Notable category Nb: species which are thought to occur in between 31 and 100km squares of the National grid) by Waring (1993, *National Moth Conservation Project, News Bulletin* 5, Butterfly Conservation) or by Parsons (1993, *A review of the scarce and threatened pyralid moths of Great Britain*. UK Nature Conservation No. 11, JNCC, Peterborough) were recorded, with numbers given where noted.

Eupithecia millefoliata (Rossl.), Yarrow Pug.

Nb. 29.vii.1992, one; 5.viii.1992. Local in the London area, but locally abundant, most records in close proximity to the Thames (Plant, 1993, *Larger Moths of the London Area*, LNHS, London).

Cucullia absinthii (L.) The Wormwood.

Nb. 4.viii.1990, 1 ♂; 29.vii.1992, 1 ♂. In London, very local, but locally common (Plant, *op. cit.*).

C. asteris (D.&S.), Star-wort.

Nb. 29.vii.1992, 1 ♂. Very local, but locally abundant in London (Plant, *op. cit.*).

Archanara sparganii (Esp.), Webb's Wainscot.

Nb. 4.viii.1990, 1 ♀; 5.viii.1992, 2 ♂ ♂ 1f. Extremely local and rare in London (Plant, *op. cit.*).

Earias clorana (L.), Cream-bordered Green Pea.

Nb. 4.viii.1990, one; 29.vii.1992, one. Extremely local in London (Plant, *op. cit.*). Very local and scarce on the Essex coast (Emmet & Pyman, 1985, *The larger moths and butterflies of Essex*, Essex Field Club).

Calamotropha paludella (Hb.), Reed-mace Grass-veneer.

Nb. 4.viii.1990, one. Local in South-Eastern England (Parsons, *op. cit.*).

Evergestis extimalis (Scopoli), Marbled-yellow Straw Pearl.

Nb. 4.viii.1990, several seen, four retained; 29.vii.1992, two. Although

recorded from 23 vice-counties Parsons (*op. cit.*) considers this species to be breeding only in the Breckland and the Thames estuary area.

Other species, considered by Plant (*op. cit.*) to be local or uncommon in the London area, include the following:

Cyclophora albipunctata (Hufn.), Birch Mocha.

5.viii.1992. A widespread but very local resident in the London area (Plant, *op. cit.*). Local and generally scarce in Essex (Emmet & Pyman, *op. cit.*).

Perizoma bifaciata (Haw.), Barred Rivulet.

4.viii.1990, one; 5.viii.1992, two. The distribution map in Plant (*op. cit.*) shows a concentration of records in the North Downs area of London, but very few records north of the Thames. Local and generally scarce in Essex (Emmet & Pyman, *op. cit.*).

Aspitates ochrearia (Rossi), Yellow Belle.

4.viii.1990, one at rest. Locally common in East London, in the vicinity of the Thames, rare elsewhere in the London area (Plant, *op. cit.*). Locally common on the coast of Essex (Emmet & Pyman, *op. cit.*).

Lacanobia suasa (D.&S.), Dog's Tooth.

4.viii.1990, several; 29.vii.1992, 1 ♂; 5.viii.1992, 1 ♂ 1 ♀. Widespread and locally common along Thames; uncommon elsewhere in London (Plant, *op. cit.*).

Mythimna straminea (Treit.), Southern Wainscot.

27.vii.1992, two; 5.viii.1992, 1 ♀. In London, very local in *Phragmites* beds along the Thames, mostly in the east (Plant, *op. cit.*).

Amphipoea fucosa (Freyer), Saltern Ear.

4.viii.1990, common, 6 ♂ ♂ 9 ♀ ♀; 29.vii.1992, 2 ♂ ♂; 5.viii.1992, 3 ♂ ♂ (vouchers retained and genitalia examined). Last recorded in the London area at Mitcham Common, Surrey in 1969 (B. Skinner; Plant, *op. cit.*). Locally fairly common on the coast and estuaries of Essex (Emmet & Pyman, *op. cit.*). No other members of this genus were recorded.

Archanara geminipuncta (Haw.), Twin-spotted Wainscot.

4.viii.1990, 1 ♀; 5.viii.1992, 2 ♂ ♂. Extremely local in London (Plant, *op. cit.*).

Arenostola phragmitidis (Hb.), Fen Wainscot.

4.viii.1990, one. In London, very local but locally abundant in *Phragmites* beds (Plant, *op. cit.*). Locally common in Essex (Emmet & Pyman, *op. cit.*).

Pyrrhia umbra (Hufn.), Bordered Sallow.

29.vii.1992, 1 ♂; 5.viii.1992, 1 ♀. Very local and generally uncommon in London (Plant, *op. cit.*). Local and scarce in Essex (Emmet & Pyman, *op. cit.*).

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Rain and gales are good for sugaring

In 1993 Michael Majerus reported a remarkable catch of moths at light-traps during a torrential thunderstorm (*Bulletin of the Amateur Entomologists' Society* **52**: 157-159). I recently came across an 1888 record of an equally remarkable catch of moths, this time at sugar, during a violent storm which I feel is worth re-publishing. The article, entitled *Sugaring at Deal* is by J.W. Tutt and appeared in *The Young Naturalist* **9**: 164. The following account is as published, with the original parenthesis () and capitalisation, but I have inserted the modern names in square [] brackets.

"I went to Deal on the 7th July and stayed a few days. *Ochrata* [*Idaea ochrata*, Bright Wave] was only just coming out, and will be very rare (end of June is the ordinary time). *Littoralis*, [*Mythimna littoralis*, Shore Wainscot – but see comment below] only just out. *Caecana* [*Cydia caecana*, Kentish Piercer] I made a special journey for and never saw. I did nothing up to the Tuesday when I made a final rush for the sandhills *Gel.[echia] distinctella* [*Chionodes distinctella*, Distinct Groundling] and *desertella* [*Bryotropha desertella*, Common Sandhill Groundling] were the only insects in abundance and they did not care to fly. About eight, the wind dropped and I got my little fellow to put on the treacle. He had hardly finished when (about nine) the wind increased almost to a gale. I could scarcely keep the lantern alight, and to make matter worse, rain came on torrents. There was no shelter, but we were provided with macintoshes, so I looked at the sugar. The posts were alive with insects: *Exclamationis* [*Agrotis exclamationis*, Heart and Dart], *segetum* [*Agrotis segetum*, Turnip Moth], *polyodon* [*Apamea monoglypha*, Dark Arches], *pronuba* [*Noctua pronuba*, Large Yellow Underwing] &c., fought in crowds for room, until they were blown off by the wind. How they managed to stand still at all was a mystery. I filled up my boxes in about 20 minutes, with fine vars. of *Corticea* [*Agrotis clavis*, Heart and Club], *littoralis* [*Mythimna littoralis*, Shore Wainscot], *sublustris* [*Apamea sublustris*, Reddish Light Arches] and such like sandhill specialities, and after they were all filled I looked and longed. I could have filled 500 boxes with really useful insects, had I had them. I found *Acer tridens* [*Acrionicta tridens*, Dark Dagger – but see below] (a splendid form) *triangulum* [*Xestia triangulum*, Double Square-spot], *putris* [*Axylia putris*, Flame Rustic] and such like species that probably had never been seen on the sandhills before, for there are no woods for miles around. *Aceris* [*Acrionicta tridens*, Dark Dagger] was on a gate post facing the sea, and clinging like grim death. It is a puzzle where he came from. I took all I could box and returned. I do not care for too many in one box, but some of them had three in, and I found my night's work was about a gross and a half of insects. The greater mass were good *Noctua* varieties. Such a night does not happen often, and I would put up with the drenching every night for a long time under similar conditions. The most marvellous part of the matter relating to

the grandest and most exciting night's collecting I have mentioned above, is that on Saturday and Sunday nights, my total at sugar on the same ground were 14 all told, and two of these were brown varieties of *Polyodon* [*Apamea monoglypha*, Dark Arches]. Where do they get to on these unproductive nights? They do not fly, but must be present in thousands. If they will not come to sugar it is rarely of use working the marram flowers, but when it is a good night to sugar, it is generally good at flowers also."

I find the account both rather disjointed, ambiguous and rather intriguing. Who, for instance, was "my little fellow" who put on the treacle? If Tutt had been playing golf he would have been a Caddie. Was he one of Tutt's servants who he had taken with him to Deal, or more likely a local lad accompanying him for a shilling or two in order to help carry the equipment as well as apply the treacle?

Now 7 July 1888 was a Friday, so I find it most surprising that Tutt, of all people, "did nothing up to the Tuesday" and then made a "final" rush to the sandhills, the word "final" clearly implying that he must have done some collecting before then! Now since he clearly also states that he collected at the same spot on Saturday and Sunday nights was this the weekend *following* his arrival on Friday the 7th, which contradicts "did nothing up to the Tuesday", or was it the following weekend? In which case we have no account of how he spent the rest of the week and his "few days" were a very extended visit. The note looks as if it were written in a hurry and since the last few lines as printed in *The Young Naturalist* have been squeezed up to fit the page, may well have been severely edited. One also has to consider the speed with which he boxed his specimens. "A gross and a half" in 20 minutes equals ten moths a minute! All done in a gale with torrential rain. One has to admire the man.

A few years after Tutt's visit much of the sandhills was converted into a golf course. Nevertheless, sixty years later, with one exception, all the macros mentioned were still to be found in the area and were recorded by Embry and Youden in their 1949 book *The butterflies and moths found in the Dover and Deal district of Kent*. They do not mention the Dark Dagger, notoriously difficult to separate from the Grey Dagger *Acronicta psi*, which is recorded at Deal, except by rearing or examination of the genitalia; a technique very much in its infancy in 1888. Whether Tutt took it to be that species on a dark and stormy night in the pouring rain or whether he confirmed it when he got home, we shall never know, but the fact remains that it is the only published record of the Dark Dagger from Deal, unless someone has found it there recently. There is also a slight possibility of mis-identifying "*littoralis*" as the present name, with the two t's is *Lobesia littoralis* Shore Doubtful Marble, but since this is a common and widespread micro I feel sure that Tutt meant the one "t" *litoralis* which is *Mythimna litoralis* Shore Wainscot, a typical sandhill species which was worth coming to Deal for.— BRIAN O.C. GARDINER, 2 Highfield Avenue, Cambridge CB4 2AL.

**OBSERVATIONS OF BUTTERFLY BEHAVIOUR IN 1996 IN
BERKSHIRE: INTERPLAY BETWEEN *VANESSA ATALANTA* (L.),
CYNTHIA CARDUI (L.) (LEP.: NYMPHALIDAE) AND ONE GAY
CAT, AN (?) ALLURING PREDATOR**

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Summary

THE BEHAVIOUR in 1996 of the Red Admiral *Vanessa atalanta* (L.) and the Painted Lady *Cynthia cardui* (L.) differed from that observed in the exceptional year of 1995, *cardui* outnumbered *atalanta* tenfold in July and August, *atalanta* established in June the same territory as in 1995 and held it throughout July, but did not share it with the Comma *Polygonia c-album* (L.) and from 2 August started nectaring, curtailing territorial behaviour by several weeks. In neither year was any other territory noted. In late July sunlight, the gay coat of the same cat predator, noted in previous years, seemed to attract *atalanta* from his perch on the usual bush and for half an hour the author repeatedly intervened in order to save the butterfly's life.

Introduction

My first detailed observations (Wiltshire, 1997) of the territorial behaviour of *Vanessa atalanta* were made almost daily, during the 1995 heatwave, in my back garden. Usually rather rare in Cookham, *Cynthia cardui* was not noted in 1995 until August, but reached Cookham in 1996 during June, only a few days after *atalanta*, a good month after the arrival of these two immigrants in the south and west of England. My old Barr and Stroud binoculars needed repair in 1995 but were fortunately mended in time to help distinguish, at a distance, Red Admirals from Painted Ladies.

The cat incident was at such close quarters that there was no need to use binoculars. This individual was the same as in the 1995 observations; below he is referred to as "Spike", the name my neighbours gave him. He is one of a troop of four cats from my westward neighbour – three toms, all differently coloured, plus a black female, who is the mother of a tabby tomcat, the others are unrelated to each other. The other two are both short-haired. The leader, large, about equally black and white, a dour tom, and lastly Spike, with about equal orange and white blotches and a tiny grey moustache not really compensating for some effeminate habits. The three toms prowl far and wide in the close neighbourhood, each alone, and habitually crossing my lawn or front garden on their eastward way and westward return home. The smaller female goes less far afield. Spike has for years marked the flowers on the sunny lawn border with his urine-spray as his own territory, whether for grooming or watching the *Rhododendron* bush on which the shorter-lived butterfly owners successively perch, when not patrolling the lawn or settling

on one of its hotspots where, on midsummer afternoons, the sun sinks behind a high laurel-hedge and warms the mown turf. The three others, naturally, were tempted to stalk or catch passing insects, but without Spike's perseverance and systematic predation method with chosen location developing from several years experience. One suggestive incident is described in detail below under 31 July.

Some other butterflies were more scarce in Cookham Rise in 1996 than in 1995 – the Comma *Polygonia c-album* (L.), the Peacock *Inachis io* (L.), the Small Tortoiseshell *Aglaia urticae* (L.) and the Speckled Wood *Pararge aegeria* (L.). This year I noticed that the nettles, which constitute the principal foodplant of the first three and usually grow rife on the edges of allotments or the large playground at the end of my back garden, had been sprayed with herbicide or cut with a scythe. I think this accounts for the scarcity in their case. For the *aegeria* our own actions in reducing long grass in our various gardens are doubtless responsible.

On the other hand, the Holly Blue *Celastrina argiolus* (L.), which had disappeared from my garden in 1993, had reappeared in 1994 and by 1996 was as common as ever, the first brood flying from mid-April to end of May and again from mid-July to August, with several evident courtships. Though holly grows in my garden, I have not found the butterfly's early stages thereon, my trees being male with no berries and brittle, spiky leaves, which would seem inedible. However, most years I have noted the second brood larvae on ivy, both fruit and leaves.

The Comma was more scarce in 1996 than were either the Peacock or the Small Tortoiseshell and I only saw one in the whole season, on 4 September on one of my *Buddleia* bushes, by which date the Red Admirals and Painted Ladies had all departed.

Excerpts from my 1996 diary, summarised the immigrants' season.

The first *atalanta* of the year arrived before 18.00 hrs BST on 6 June, sat first on the lawn "hot-spot", later circled over the flowering *Rhododendron* bush in the sunlight, perched on the bush, challenged two different species of butterfly but did not chase them far, and patrolled the sunny parts of lawn before disappearing, these comprising all the usual procedures of a male *atalanta* claiming a territory as its own. About a week elapsed before this species reappeared. The first male presumably continued migrating northwards the next day, though this was cooler and more dull.

The first *cardui* was seen in the garden at 15.35 hrs on 9 June, settling on the lawn at the usual "hot spot". Later it visited other parts of the garden, basked on warm ground briefly, patrolled the sunlit but rather breezy lawn, left the garden, and narrowly escaped Spike, on the gravel drive of the front garden, if indeed this was the same butterfly. It looked travel-worn but still lively. Both species reappeared in the afternoon of 13 June in my back garden, a single fresh *atalanta* and two *cardui* – apparently a courting couple.

On 14 June both species were noted – *cardui* briefly nectaring at 14.25 hrs and not reappearing and a small, fresh *atalanta* from 17.15 hrs until 19.20 hrs, when the sun sank lower and he moved into apple foliage two metres higher in the same prelude to roosting in the taller trees as repeatedly seen in 1995. Of the two species, at this midsummer date, *cardui* was the more mobile and restless, *atalanta* tending more to settle.

The next two days were hot and sunny with a variable breeze, but neither of the two species were noted. Perhaps both had moved on northwards. As for the Silver Y moth *Autographa gamma* (L.), not one had yet been noted, though reports had said it was accompanying the immigrant butterflies. In mid-June the sun sets at about 20.55 hrs at Cookham and similar latitudes, thereafter gradually earlier.

During the rest of June, *cardui* was not noted at all, but *atalanta* appeared in my back garden most afternoons, mostly as singletons “owning” the bush, and sometimes challenging a rival male or coquettish female. Three June days were rather cool or rainy and *atalanta* was not seen, other butterflies being equally discouraged; otherwise this went on until about 20 July. I cannot be sure how often ownership changed during these forty-five days, not having marked any *atalanta*.

About 18-21 July hot weather arrived and *cardui* returned to my garden in small numbers to nectar at lavender and other flowers. On and after 25 July *Buddleia* attracted an assortment of butterflies, and numbers of *cardui* increased. On 25 July an *atalanta* drove one away from his *Rhododendron* bush. It was not tempted at this time to join the butterflies on *Buddleia* flowers, though during the previous week or two it had sometimes basked on one of my three *Cotoneaster* trees and may have sipped from their flowers, though these seem rather unattractive to insects.

Despite some search I found no other territory in Cookham with an *atalanta* owner, but feel sure that Berkshire and the Thames valley contain many other such small kingdoms. The Silver Y moth was noted in another part of Cookham on 22 July and in my garden on 31 July.

31 July: While several *Aglais urticae* and *Inachis io* fluttered all day on the biggest *Buddleia* together with about twelve *cardui*, *V. atalanta* persisted in territorial rituals, starting about 17.00 hrs with two of them clashing above the bush. Afterwards, the victor perched and patrolled in the usual way. At 17.25 hrs Spike the cat walked slowly to his couch on the hotspot and, not seeing *atalanta*, started grooming himself. I had already this year seen him try to catch, but miss, both *cardui* and *atalanta* and in earlier years had seen him succeed in killing several. At 17.20 hrs there were again two *atalanta* males circling over the bush. Spike had left his place of ambush, visited the neighbour's garden for a prowling, and returned again to the hotspot and watched *atalanta* circling above the bush. When the flight dipped to near the lawn he leapt, struck with both paws and missed. Between 18.30 hrs and

19.30 hrs I myself approached the bush, and the sun fell straight onto the cat. The *atalanta* fluttered straight towards the cat, but I waved him away, stopping the cat from striking. Thinking it must be the bright colours of Spike's coat that allured the *atalanta*, I interposed myself between the sun and the cat. *Atalanta* then perched on my shoulder and basked contentedly, until I moved away and the sunlight again fell on the cat. The butterfly was more attracted to Spike than to me. To save him from death I again intervened, and each time he sat on my pale beige jacket. At 19.00 hrs the sunlight left the lawn but still lit *Cotoneaster* leaves about a foot above Spike's head, and when *atalanta* tried to bask there Spike tried to catch him again, so I held the cat down. He became angry and tried to bite me, but at last he thought something moved below the tree's foliage and, distracted, he cautiously crept through into my eastern neighbour's garden, thus terminating a very curious hour.

1 August: Intermittent sunshine. *Cardui*, *io* and *urticae* nectared at my best *Buddleia* from about 13.00 hrs onwards. One *atalanta* arrived at a hotspot on the lawn about 17.00 hrs after Spike had visited his usual place and left again. At 18.30 hrs two *atalanta* danced a pas-de-deux above the bush. At 18.45 hrs a *cardui* searching for a roosting place in the *Cotoneaster* foliage was driven off by the Red Admiral, which then basked on the *Rhododendron* bush until the sun went down, the cat not having returned.

2-11 August: I was away in Switzerland where good weather lasted until the 10th. I stayed in the canton Vaud and also made a trip to greater heights of the Jura Mountains. I saw neither *atalanta* nor *cardui* there during this visit, to my surprise. However my son-in-law sent me a photo of *cardui* taken in his garden about ten days after my return to Cookham, probably evidence that a return migration from northern Europe southwards was beginning.

Rain storms occurred in Berkshire during my absence and reached the Jura on 10 August. I found wet and cool weather on landing in Berkshire on 11 August, but fine weather must have preceded it during which Spike may have killed one or more *atalanta* or *cardui*, for even when present at home I could not always prevent it, as happened on 13 August below. The weather change induced a behaviour change in *atalanta* – nectaring replacing territorial behaviour, such as I did not see in 1995 at all.

By counting the number of inflorescences on a single branch of *Buddleia* in my garden I estimated that my best bush had over 150 racemes this summer. The other two had fewer, depending on the amount of sun and shade of each. Every winter they were strongly back pruned.

12 August: Despite changeable weather, at 16.30 hrs one *atalanta* and two *cardui* nectared at *Buddleia*, the former eagerly, the latter more restlessly, together with other butterflies.

13 August: From 10.00 hrs several *cardui* and one *atalanta* nectared at *Buddleia*. The latter also basked briefly on a white-painted chair on my back

terrace. By midday *io* and *urticae* had joined the throng on my best bush, and nectaring *cardui* numbered about a dozen. *Pyronia tithonus* (L.) and *io* also visited the lawn hotspot to bask, and Spike, arriving at 17.30 hrs stalked, but failed to catch them. Unfortunately an *atalanta* on a neighbouring *Buddleia* bush imitated them, Spike sprang again, killed it, and ate the abdomen, also mauling the wings and thorax. When *cardui* also settled on the lawn, Spike showed no interest, perhaps being replete with what he had swallowed. At 18.00 hrs two *cardui* performed a courtship dance above the *Rhododendron* bush. One *gamma* was seen at the *Buddleia*, at 18.50 hrs. At 17.45 *cardui* would search for a roosting place, usually in garden trees or bushes about one to three metres high.

14 August: About 13.00 hrs I counted one *atalanta* and 12 *cardui* nectaring on my best *Buddleia*. They were safe there from the cats, and Spike paused at the lawn hotspot on his way from the daily prowling, and then proceeded home.

15-28 August: Fine, dry but often cool weather prevailed over this period. Nearly every day at least one, at most three, *atalanta* nectared at my best *Buddleia*, while *cardui* continued to become much more numerous. *Gamma* also increased its numbers. *Atalanta* nectared assiduously several hours daily, mainly in the afternoon, but on fine days as early as 10.00 hrs, and never challenging any other butterfly even when conspecific. A large dragonfly patrolled the lawn and may have been the only successful predator. Several *argiolus* were noted on the 17th but none thereafter. Whites were common.

29, 30 August: The weather broke, it rained and no butterflies were seen.

31 August and 2-3 September: Red Admiral singletons and a few Painted Ladies continued to build up for their southward journey, though the *Buddleia* racemes were getting browner and drier. From 4 September my garden saw them no more. But on 8 September the Comma nectared on the last flowering *Buddleia* before hibernation locally. Whites were seen until 16 September.

Discussion

Having been in Cookham throughout the first half of 1996, I am not in a position to explain the very high numbers of *cardui*, nor the polyphagy which, I am told, was found in the resulting generation, so I pass over these phenomena which marked the year, and move on to other points of interest.

The territorial behaviour which I first noted in my back garden in 1989, must be due to a favourable conjunction of topographical features and climatic conditions encountered in June by a newly arriving butterfly. It is not necessarily continued by this individual on the morrow. In butterflies this behaviour is generally a prelude to courtship. Having seen both *cardui* and *atalanta* behaving thus, I have still to observe the act of copulation in the

wild in Cookham, and I deduce that it happens in the tall trees where *atalanta* roosts, and the less-tall vegetation where *cardui* roosts.

Semi-aestivation is a term applicable to three different types of resting before mating. Perhaps each species and each individual "does its own thing", but the individual nature of territorial behaviour in *atalanta* is quite distinct from the congregating in masses of *Dansaus plexippus* (L.) performing semi-hibernation (Urquhart, 1976 a, b) or of *Euplagia quadripunctaria* (Poda) at Petaloudes in Rhodes (Elger, 1969), a semi-aestivating univoltine migrant. Whether the term semi-aestivation, suggested as perhaps describing the 1995 *atalanta* behaviour, rightly applies there, is debatable but it can be ruled out for the *atalanta*'s 1996 behaviour at Cookham – 22 days nectaring following about 40 days territorial behaviour might be an average, normal division of behaviours at a northern terminus for this migrant, due to more normal, local weather in 1996.

The cat incident of 31 July was the climax to several years observation of the same individual predator in the same locality, and evokes two different questions – the reaction of butterflies to visual stimuli and the utility to a predator of its coloration.

Attraction to a white surface (e.g. washing on a line, or painted garden furniture) is frequently noted in *atalanta*, perhaps less in *cardui*, which, however, sometimes comes to light. Numerous authors have discussed phototropism in insects, and this aspect need not be discussed here. On the side of the predator, the incident might be taken as a case of "alluring coloration" (a term used by Cott, 1940) for two species of bird and one of fish. Over several years, Spike unquestionably learnt to profit, as described previously. It is however, an individual progress unlikely to evolve into a race of dangerous predators, as domestic cats' main food is tinned meat supplied by their owners and cryptically coloured cats, inheriting patterns of ancestral wild cats are probably more advantaged in hunting wild prey than aposematic cats.

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**Is cypress an alternative foodplant of *Argyresthia arceuthina* Zell.
(Lep.: Yponomeutidae)?**

In the latest source-book available to me on the subject (Emmet (ed.), 1979, *A field guide to the smaller British Lepidoptera*), *Argyresthia arceuthina* Zell. (p.68), like its four allies, has only *Juniperus* assigned to it as a foodplant. The following incident suggests a strong possibility that species of *Chamaecyparis* or *Cupressus* may also serve, either occasionally or as a fairly recent innovation.

By the front door of my former house in Blackheath near here stood a *C. lawsoniana* of the fastigate cultivar *allumii*. One day (22.v.1965) when running an eye over it for possible insects, I espied a very small, pale moth hovering among the sprays of foliage, seemingly intent on investigating and never moving far. Though watching it for a while I never saw it settle, still less engage in evident egg-laying activity. Having no more time to spend in watching, I took the moth which proved to be a female *A. arceuthina*. Despite frequent inspection of the cypress thereafter, no other was ever seen.

It is quite true that this experience proves nothing, except that that particular moth must have found cypress in some way interesting or attractive. There was no juniper in the garden, nor, as far as I knew, in either of the next-door ones. Still, it appears strongly indicative in the light of certain other recent findings. One could instance the juniper-feeding shield-bug *Cyphostethus tristriatus* (F.), which has of late years extended its hosts to species of *Chamaecyparis* and *Thuja* (and *Cupressus*?). Botanically, these genera are very closely akin to *Juniperus*. On might instance also certain of the "pugs", perhaps especially *Eupithecia intricata* (Zett.) and its subspecies *arceuthata* (Freyer) named after the juniper, and frequently recorded from cypresses.— A.A. ALLEN, 49 Montcalm Road, Charlton, London SE7 8QG.

Demise of *The Entomologist*

When the Royal Entomological Society re-launched *The Entomologist* in 1988 it was always with the intention that while it would be necessary to subsidise it initially, there was every hope and intention that it would eventually break even. Unfortunately, after ten years of publication, this has not happened and a study of the Annual Accounts, which are published in *Antenna*, show that even with a circulation of around 800 it continues to be a drain on the Society's resources, although this has reduced in recent years. Approaches have been made to other organisations to take over, or combine it with their journal, but without success. Sadly, therefore, perhaps precipitated by my intention to retire as editor, it has been decided to discontinue the journal with the completion of the current volume.— BRIAN O.C. GARDINER, 2 Highfield Avenue, Cambridge CB4 2AL.

Some interesting invertebrate captures from a dung heap in West Lothian (VC84), with reference to the recent status of *Labia minor* (L.) (Dermaptera: Labiidae) in Scotland, and a new habitat for this species

An investigation of a horse dung heap on farmland at Old Philpstoun, West Lothian (NT0577, VC84) on 24 May 1995 yielded a number of new vice-county records, with captures of single specimens of the syanthropic woodlouse *Porcellionides pruinosus* (Brandt, 1833) (Isopoda: Porcellionidae) and *Ontholestes tessellatus* Geoffroy (Col.: Staphylinidae) in dry powdery dung at the edge of the heap. Particularly interesting was the unexpected capture of a 5th instar male *Labia minor*, which had not been previously noted from the county, also in the dry dung at the edge of the heap.

Further examples were found in a bowling green grass clippings heap in Bo'ness, West Lothian (NT0081) on the 26 July 1995, when an adult female *L. minor* was found in company with numerous *Forficula auricularia* (L.) (Dermaptera: Forficulidae). A single male *L. minor* was found subsequently in the same heap, and it appears that the decaying short grass provides conditions almost identical to those found in horse dung heaps. It seems likely that further specimens of *L. minor* may occur in grass clipping heaps, especially where the grass is kept particularly short, and could reveal a number of new localities in Scotland.

There are very few recent records for *L. minor* in Scotland, despite its former widespread distribution as far north as South Aberdeenshire (VC92). Most recently it has only been recorded from a muckheap at the side of a field southwest of Rosehearty (NJ9165, VC93) on 28 September 1993, where it was collected by Jon Dawes. The only other specimens recorded since 1960 are a series of four males and six females collected by Dr R.A. Crowson in 1987 from a compost heap in Garscube, Glasgow, which is also a new record for VC77. Of historical interest is a female specimen collected in 1904 by J.J.F.X. King at Forres (VC95), which has apparently been unrecorded in literature. My thanks to Chris Timmins for confirming the West Lothian specimens of *L. minor*, and to Dr David Bilton for confirming the specimen of *P. pruinosus*. Special thanks must go to Maggie Reilly for allowing me to study the Orthoptera collection at the University of Glasgow, to staff at the Royal Museum of Scotland for arranging access to their collections and *Scottish Invertebrate Records Index*, and finally to Chris Haes for his helpful comments.— A. RAMSAY, Dryfemount, Dundas Street, Bo'ness, West Lothian EH51 0DG.

***Trichoplusia ni* (Hb.) (Lep.:Noctuidae) The Ni Moth in Glamorganshire**

A single specimen of *Trichoplusia ni* was caught in the Rothamsted Insect Survey light-trap at Cardiff (site number 347, O.S. grid reference ST198788) on 10.vi.1996. So far as I am aware, this scarce immigrant has not previously

been recorded from Glamorganshire (Heath, J. & Emmet, A. M., 1983, *The Moths and Butterflies of Great Britain and Ireland*, volume 10: Harley Books). These authors state that arrivals of *T. ni* are usually associated with those of *Heliothis peltigera* (D. & S.) – the Bordered Straw. Interestingly, an individual of this species was caught in the same trap on 14.vi.1996. Thanks are extended to Roger and Vicky Smith for operating the trap at Cardiff and for identifying their catches.— ADRIAN M. RILEY, Entomology & Nematology Department, IACR Rothamsted, Harpenden, Hertfordshire, AL5 2JQ.

BOOK REVIEW

Butterflies on British and Irish offshore islands by Roger Dennis and Tim Shreeve. 132 pages, 11 text figures and 9 Tables of data. 233 x 155 mm, paper covers, perfect bound. ISBN 0 906802 06 7. Gem Publishing Company, Wallingford, OX10 0QD, 1996. £16.00.

For the ecologist and general entomologist alike, islands hold a particular fascination. Here, in splendid isolation, may be found races, forms, subspecies (call them what you like) of a variety of insects that occur nowhere else. This fascinating book draws together data on the butterfly species from no less than 219 British and Irish offshore islands and analyses them in a most thorough manner which sets out an excellent baseline for further ecological studies. As such, the work is long overdue and the two authors are to be congratulated on a most excellent piece of research, accurately and thoroughly conducted and very well presented in a very readable form that will surely stimulate the further researches which they themselves aim to encourage.

The book falls into two sections. Collectors will doubtless only be interested in the second, which is essentially a complete species listing for each of the islands from which data are available, together with a bibliography complete to 1 August 1996. Islands from where no data are available are listed and it is hoped that this will stimulate recording work on these. However, more serious entomologists will hopefully find the first section, which forms the bulk of the book, a more serious proposition, though in fairness to potential purchasers it has to be said that some working knowledge of ecological mathematics will greatly ease passage through some of the pages. The ecology of island butterflies is introduced, as far as it is known, and then in different chapters the authors discuss the analysis of island records, factors affecting species' richness on islands, relationship among islands, butterfly associations on islands, predicting butterfly records on islands, migration, ecological basis for island butterflies, variation and historical considerations, before ending with suggestions for future work and some conclusions, which take the form of an eight point summary.

The bibliography is well researched and, though it is really irrelevant to this review, it is of great interest to note the number of times that the *Entomologist's Record & Journal of Variation* is mentioned in this list - proof positive that even the shortest, most trivial of notes submitted here for publication can make a positive contribution to the greater understanding of much wider issues.

At £16.00 I personally feel that this book is a little over-priced. This may reflect the relatively small potential audience and consequently restricted sales potential which affects most insect books in Britain (the more you print the cheaper the price but you have a lot unsold at the end). On the other hand I feel that this book has a far wider appeal than just amongst British entomologists. It is a model ecological study that will be of great interest to other ecologists, to academics and others not only in Britain but also elsewhere in the world.

Colin W. Plant

The Pollen Wasps: Ecology and Natural History of the Masarinae by Sarah K. Gess. 340 pp., 25 colour plates and 60 black and white illustrations. A5, hardbound. Harvard University Press, 1996. ISBN 0 674 68964 X. £31.50.

Pollen wasps are the only wasps to provision their nest cells with pollen and nectar and are of special interest because of their close associations with flowering plants and because certain species produce silk for nest building. Related to the vespids, there are about 300 known species found in many parts of the world, favouring regions with hot dry climates and scrubby vegetation including the Mediterranean.

Sarah K. Gess has made the study of aculeate Hymenoptera in southern Africa her life's work and this authoritative book is based on her extensive field observations of the many pollen wasp species found there and the associations between them and five plant families. There are chapters on the biogeography, flower associations, life history, nesting and associates of pollen wasps. Further chapters look at pollen wasps as potential pollinators and their conservation status and relationship to land use.

Appendices provide records of masarine wasp flower visiting divided into geographical regions, plants associated with masarine wasps in southern Africa with their solitary aculeate wasp and bee visitors and a checklist of described species.

This book will be indispensable to any student of the group and of considerable interest to many other entomologists and naturalists.

Peter Harvey

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

(Founded by J.W. TUTT on 15th April 1890)

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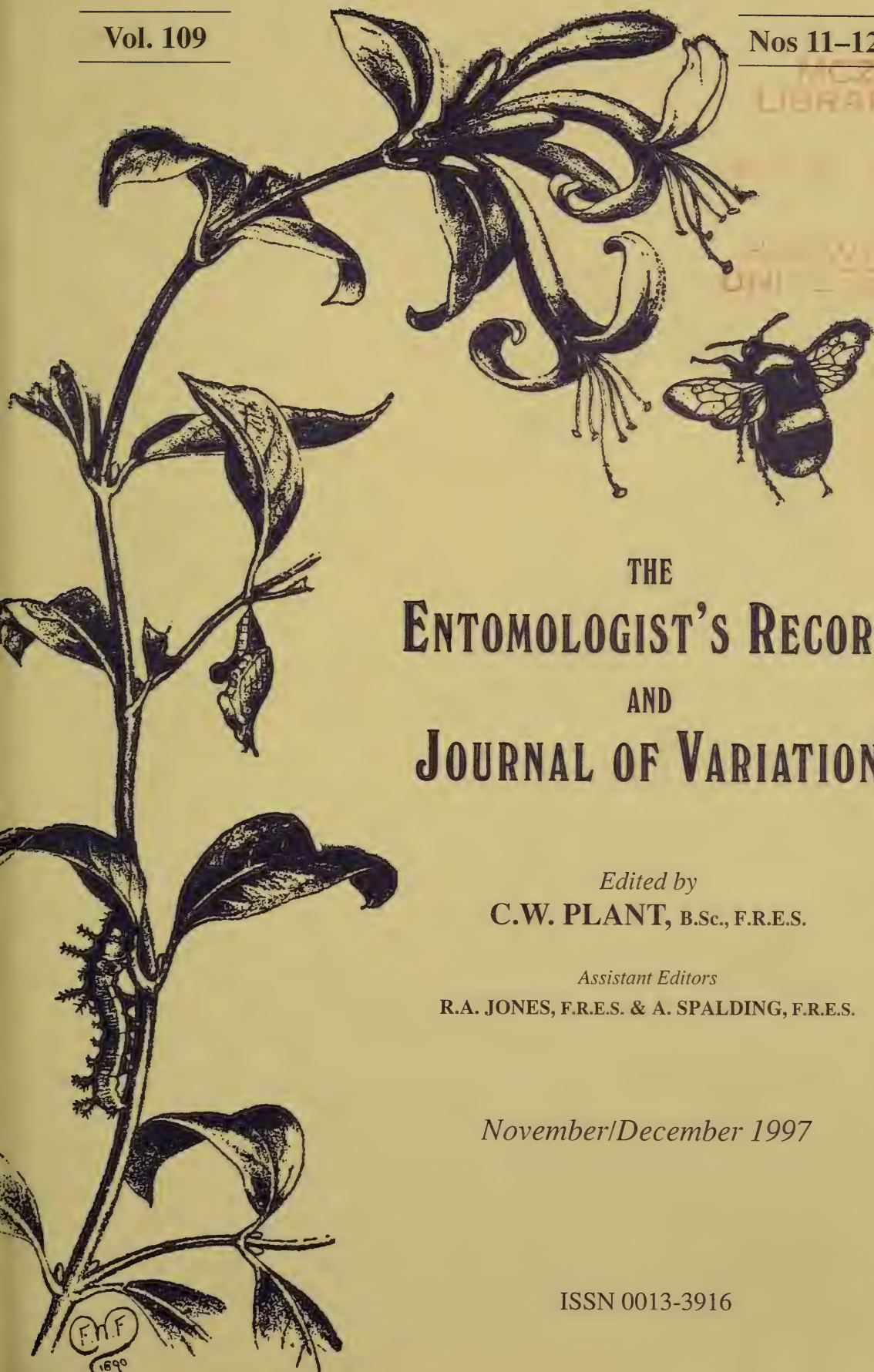
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LEPIDOPTERA NEW TO SHETLAND, 1994-1996

M.G. PENNINGTON, T.D. ROGERS AND K.P. BLAND

Shetland Entomological Group, 9 Daisy Park, Baltasound, Unst, Shetland ZE2 9EA.

THE LEPIDOPTERA of Shetland have probably never received as much attention as they have in the last few years with the establishment of regular trap-sites in the islands. Short notes giving details of some recent records have been published by Riddiford and Harvey (1992), Pennington (1993a) and Pennington and Rogers (1994), but records for the years since 1993 have not been published, partly because of the volume of new information. This paper lists the 86 species recorded in the islands for the first time during 1994-96, a period which included several notable immigrations of migrant insects. The additions take the list of Lepidoptera recorded in Shetland to 286 species. There is no space to include information on several other notable records but a brief annotated Shetland Lepidoptera list has been compiled and will hopefully appear in a forthcoming book on Shetland.

Each of the last three years has been notable for periods of immigration associated with south-easterly winds. In 1994 there were two principle periods of immigration, in early July and early August. The July influx principally involved diurnal species with large numbers of Red Admirals *Vanessa atalanta* (L.) and hoverflies (Diptera: Syrphidae), two Hummingbird Hawk-moths *Macroglossum stellatarum* (L.) and Shetland's first Green-veined White *Pieris napi* (L.), although Bird-cherry Ermine *Yponomeuta evonymella* (L.) was also new to the islands. In early August 1994 there was an influx of more nocturnal species including two species, Crescent *Celaena leucostigma* (Hb.) and Nutmeg *Discestra trifolii* (Hüfn.), which appear to be an important component of any easterly immigration into Shetland. Fourteen species were added to the Shetland list during this period, including some species which may be resident, and some microlepidoptera of uncertain status. The most notable additions were a dead Swallowtail *Papilio machaon* (L.) (Pennington, 1996) and the tortricid *Lobesia abscisana* (Doubl.).

For most of 1995 there was no major immigration although there was a steady trickle of migrants beginning in late July when Shetland's first Double Square-spot *Xestia triangulum* (Hüfn.) was recorded. In September there were several notable records including another Swallowtail, a Clifden Nonpareil *Catocala fraxini* (L.) and the pyralid *Euchromius ocella* (Haw.). There were also large numbers of certain species apparently associated with easterlies in September, such as the Brick *Agrochola circellaris* (Hüfn.), Red Sword-grass *Xylena vetusta* (Hb.) and the Satellite *Eupsilia transversa* (Hüfn.), accompanied by a reasonable influx of Rush Veneers *Nomophila noctuella* ([D. & S.]).

After a relatively quiet start 1996 exploded into activity in early August with a massive invasion of hundreds of millions of Silver Ys *Autographa*

gamma (L.) accompanied by a wide range of other species (Pennington 1997). Over 40 species were added to the Shetland list in 1996, most in August, with highlights including Scarce Brindle *Apamea lateritia* (Hüfn.), Dewick's *Plusia Macdunnoughia confusa* (Steph.) and more *Lobesia abscisana*.

All records in this paper are by the authors and unless otherwise stated records from Unst are by Mike Pennington, records from Mainland are by Terry Rogers and determinations are by Keith Bland, with specimens placed in the National Museum of Scotland. Nomenclature and food plants are taken from Emmet and Heath (1991) and wherever comments are made on the status of food plants in Shetland the source of information is Scott and Palmer (1987).

Systematic list of species new to Shetland

In this list the following status categories are used based on those used by Lorimer (unpub.) and unpublished lists of Shetland Lepidoptera produced by Mike Pennington.

Resident – a species which definitely or probably has a resident breeding population in the islands. Little work has been directed towards locating larvae so sometimes this assessment involves some intelligent guesswork.

Immigrant – any species which does not have a resident breeding population in the islands but which occurs on a regular basis. Some immigrants, such as vanessid butterflies, may breed but they are not resident.

Vagrant – any immigrant which has occurred on less than 20 occasions. This definition of vagrancy is similar to the definition used by birdwatchers and it indicates the rarity of the occurrence. Vagrants may be long-distant migrants well outside their normal range or resident species wandering over a short distance.

Accidental import – any species which has only occurred with the obvious assistance of man's activities.

Status uncertain – any species for which there is not enough evidence to assign a status, usually species which have available food plants in the islands but which have occurred during periods of immigration.

GRACILLARIIDAE

Caloptilia elongella (L.)

Presumed resident: two singles at Eswick, Central Mainland: bred from alder *Alnus*, emerged 24 September 1995, and on sugar, 16 December 1995.

YPONOMEUTIDAE

Argyresthia conjugella Zell. Apple Fruit Moth

Presumed resident: at least four flying at dusk at Eswick, Central Mainland on 8 July 1996.

Yponomeuta evonymella (L.) Bird-cherry Ermine

Immigrant: following one caught at Voehead on Bressay on 7 July 1994 (Joyce Gammack) another five were recorded in South and Central Mainland in August 1994 and there were about 20 on Mainland and Unst in August 1996.

Y. cagnagella (Hb.) Spindle Ermine

Vagrant: at least four records in August 1996 – Walls, West Mainland on 5th (Billy Watt), Odraquoy, South Mainland on 7th and 9th (George Petrie) and at least one on Foula on 12th (Sheila Gear).

COLEOPHORIDAE

Coleophora mayrella (Hb.)

Presumed resident: one record only, at light on Fair Isle on 17 July 1994 (Nick Riddiford, det. Maitland Emmet, specimen retained by collector).

C. asteris (Mühl.)

Status uncertain, probably vagrant – one record at light at Eswick, Central Mainland on 13 August 1996. The record occurred during considerable immigration and the food plant *Aster tripolium* is extremely rare in Shetland. There are only two previous Scottish records.

C. versurella Zell.

New to Scotland. Presumed resident. Singles collected from Eswick, Central Mainland on 7 July and 2 August 1994 and Baltasound, Unst on 5 September 1995. The food plants are various species of *Chenopodiaceae* which are reasonably common around beaches in Shetland.

C. vestianella (L.)

Presumed resident: only record at light at Eswick, Central Mainland on 8 July 1994.

C. alticolella Zell.

Resident: fairly frequent on moorland on Foula in July (Frances Ratter).

ELACHISTIDAE

Elachista kilmunella Stt.

Presumed resident: only record, one caught by day on Foula on 28 July 1996 (Frances Ratter).

E. alpinella Stt.

Presumed resident: only record, several flying by day on Foula on 28 July 1996 (Frances Ratter).

E. apicipunctella Stt.

Presumed resident: only record one at light at Veensgarth, Central Mainland on 1 July 1996 (Paul Sclater).

E. argentella (Cl.)

Presumed resident: only record, one caught by day at Norwick, Unst on 30 June 1996.

OECOPHORIDAE

Depressaria pastinacella (Dup.) Parsnip Moth

Status uncertain, probably vagrant: only record, one on sugar at Eswick, Central Mainland on 27 August 1996. This species is usually quite hard to overlook and the only record from Orkney is a suspected migrant (Lorimer unpub.) so this record probably relates to a migrant.

Exaeretia allisella Stt.

Status uncertain: one record, at light at Eswick, Central Mainland on 12 August 1994. Although oecophorids are not thought of as migrants there was considerable immigration at the time.

Agonopterix subpropinquella (Stt.)

Status uncertain: one record, on sugar at Eswick, Central Mainland on 11 August 1996. Another record which coincided with obvious immigration.

A. alstromeriana (Cl.)

Presumed vagrant: one record, on sugar at Veensgarth, Central Mainland on 24 August 1996 (Paul Sclater). This record came on the tail end of a considerable immigration and the usual food plants, *Conium*, are not present in Shetland.

A. nervosa (Haw.)

Resident: singles at light at Veensgarth, Central Mainland on 17 August 1996 (Paul Sclater) and Voehead on Bressay on 26 August 1996 (Joyce Gammack), both in the vicinity of established planting of the food plant *Ulex europaeus*, but the first Shetland record on Foula on 19 August 1994 (Frances Ratter) was a presumed vagrant.

GELECHIIDAE

Bryotropha politella (Stt.)

Presumed resident: only record, one caught by day on St Ninian's Isle, South Mainland on 16 July 1996.

Chionodes fumatella (Dougl.)

Status uncertain: one record, at light at Ocrabooy, South Mainland on 10 August 1996 (George Petrie). One of a number of species recorded in August 1996 that could be resident but whose occurrence coincided with immigration.

Scrobipalpa instabilella (Dougl.)

Vagrant: one at light on Fair Isle on 8 August 1994 (Nick Riddiford, det. Colin Plant, confirmed by the late Eric Bradford, specimen retained by the collector). The food plant *Halimione* is absent from Shetland and there was considerable immigration at the time.

Scrobipalpa atriplicella (F.v.R.)

Status uncertain: one at light at Eswick, Central Mainland on 7 August 1994 and about twelve in Central Mainland, Foula and Unst in August 1996. Although this species feeds on Chenopodiaceae, records have coincided with immigration and there are very few other Scottish records, so the species is probably immigrant.

[*Phthorimaea operculella* (Zell.) Potato Tuber Moth

Accidental import: several in an imported bag of Cyprus potatoes on Foula in September 1995 (Frances Ratter).]

TORTRICIDAE

Aethes smeathmanniana (Fabr.)

Presumed immigrant: singles at light at Ocraquoy, South Mainland on 7 August 1996 (George Petrie) and Eswick, Central Mainland on 22 August 1996.

Argyrotaenia ljunghiana (Thunb.)

Presumed resident: only record one caught by day on Hermaness, Unst on 22 June 1995.

Acleris notana (Don.)

Status uncertain: singles on sugar at Eswick, Central Mainland and at light at Baltasound, Unst, both on 20 September 1996.

A. variegana ([D. & S.]) Garden Rose Tortrix

Resident: first located in 1994 but locally frequent in Lerwick, Eswick in Central Mainland and Baltasound, Unst with larvae found on *Rosa* cultivars at the first site.

A. maccana (Treit.)

Presumed resident: only records at sugar at Baltasound, Unst on 21 September 1996 and at Eswick, Central Mainland on 24 September 1996. Another montane species occurring near sea-level in Shetland. Although largely found at altitude in Britain there is a record of a suspected migrant from the Faroes (Svend Kaaber *pers. comm.*).

Hedya ochroleucana (Fr l.)

Status uncertain: one at light at Ocraquoy, South Mainland on 10 August 1996 (George Petrie). Another *Hedya* sp. on Foula in August 1994 could not be identified to species due to damage in transit.

Endothenia ericetana (Humph. & Westw.)

Status uncertain: only record one at light at Veensgarth, Central Mainland on 10 August 1996 (Paul Sclater). Another record which co-incided with a period of immigration.

Lobesia abscisana (Doubl.)

New to Scotland. Immigrant: one at light at Eswick, Central Mainland on 1 August 1994 was generally regarded as an exceptional record, but there were up to 26 at light between 7-18 August 1996, at four sites on Mainland, two sites on Unst and on Bressay. This would seem to establish this species as a migrant which should be looked for at other coastal locations during periods of immigration.

Bactra furfurana (Haw.)

Presumed resident: only record at light at Eswick, Central Mainland on 2 August 1994. Although a likely resident it has not been found again and there was immigration at the time of the record.

Epinotia nisella (Cl.)

Vagrant: six at light at Eswick, Central Mainland on 11-12 August 1996 and singles at sugar at Sandwick, South Mainland on 14th (Paul Harvey) and at light at Baltasound, Unst on 25 August 1996. The only Orkney records are also suspected immigrants (Lorimer 1983).

E. maculana (Fabr.)

Status uncertain: only record at Eswick, Central Mainland in 1996, data lost but most probably in August.

Rhopobota naevana (Hb.) Holly Tortrix

Immigrant: up to 23 at light or at sugar at two sites on Mainland, two sites on Unst and on Bressay between 10-26 August 1996. Orkney records have also related to immigrants (Lorimer 1983).

R. myrtilana (Humph. & Westw.)

Presumed resident: only record one caught by day at Nibon, North Mainland on 24 June 1995.

Zeiraphera ratzeburgiana (Ratz.)

Resident: three singles caught so far in a garden with many planted trees at Eswick, Central Mainland in August 1995 and 1996.

Z. rufimitrana (H.-S.)

Presumed resident: singles at light at Ocracuoy, South Mainland on 9 August 1996 (George Petrie) and at Eswick, Central Mainland on 12 August and two of this species from a sample of seven *Zeiraphera* from a plantation at Baltasound, Unst on 28 August 1996. It seems likely that this species has been brought in with recent tree-planting and exists in small numbers alongside the populations of *Zeiraphera diniana* (Guen.) now found at several plantations.

Z. isertana (Fabr.)

Status uncertain: only record one at light at Eswick, Central Mainland on 13 August 1996. Unlike other members of this genus, this species has virtually no available food plants in Shetland. Planted oaks *Quercus* struggle to survive and there is just one tiny plant at the capture site. There was considerable immigration at the time of the record.

Epiblema foenella (L.)

Vagrant: two records - singles at light on the same night at Easter Quarff, South Mainland (specimen evaded capture) and Veensgarth, Central Mainland on 10 August 1996 (Paul Sclater).

Eucosma lacteana (Treit.)

Presumed vagrant: one record, at light at Eswick, Central Mainland on 14 August 1996. The food plant is absent from Shetland.

E. fulvana (Stephens)

Status uncertain: singles caught by day at Quendale, South Mainland on 16 July 1996 and at light at Easter Quarff, South Mainland on 11 August 1996. The normal food plants of this species, *Centaurea*, are absent or very rare in Shetland, but it is most likely resident.

PYRALIDAE

Euchromius ocella (Haw.)

Vagrant: one record at light at Eswick, Central Mainland on 17 September 1995.

Agriphila selasella (Hb.)

Vagrant: two singles at light at Eswick, Central Mainland on 7 and 14 August 1996.

A. tristella ([D. & S.])

Vagrant: one at a lighted window on Foula on 7 August 1996 (Frances Ratter) followed by about five at light at Eswick, Central Mainland between 9-13 August, two each night at Easter Quarff, South Mainland on 11-12 August and one on Fair Isle on 16 August (Elizabeth Riddiford). An unpublished record from Fair Isle in August 1990 is best considered unproven.

Pediasia aridella (Thunb.)

Vagrant: one record, at light at Eswick, Central Mainland on 11 August 1996. The second Scottish record, the first recorded by Pelham-Clinton in Midlothian (unpublished but specimen in NMS).

Platytes alpinella (Hb.)

Vagrant: one record, at light at Eswick, Central Mainland on 11 August 1996. The only other Scottish record is of four at light at Lunan Bay, near Montrose just four days earlier on 7 August 1996 (Goater 1997). Although these Mainland moths were found in suitable breeding habitat, perhaps they were migrants as well.

Margaritia sticticalis (L.)

Vagrant: about 15 records, beginning with two by day at Baltasound, Unst and one at light on Fair Isle (Mark Newell) on 11 August 1996, followed by records at three sites on Mainland and on Bressay and Foula until 22 August 1996.

Udea ferrugalis (Hb.) Rusty-dot Pearl

Immigrant: the first record was one at light at Eswick on 6 August 1994, there were four at the same site in September 1995 and 11 in August 1996. In August 1996 there were also records of another five, from two other sites on Mainland and on Foula.

Pleuroptya ruralis (Scop.) Mother of Pearl

Immigrant: the first record was one at light at Eswick, Central Mainland on 1 August 1994. On 27 July 1995 there were 13 at two trap sites on Mainland, with a few stragglers the next day. In August 1996 the species was recorded at three sites on Mainland, two sites on Unst and on Foula with a maximum of 33 at light at Norwick, Unst on 13 August 1996.

Numonia advenella (Zinck.)

Vagrant: one record, on sugar at Eswick, Central Mainland on 4 August 1994.

Pyla fusca (Haw.)

Presumed resident: one at light at Sullom, North Mainland on 24 July 1996 (Brian Elliott, specimen retained by the collector).

PTEROPHORIDAE

Platyptilia gonodactyla ([D. & S.])

Resident: singles at light at Baltasound, Unst on 7 July 1994, caught by day on Fitful Head, South Mainland on 1 August 1994 (Jon and Ad Clifton) and at Ocrabooy, South Mainland at light on 8 August 1996 and indoors on 15 September 1996 (George Petrie).

Emmelina monodactyla (L.)

Status uncertain: two records from Eswick, Central Mainland, 16 December 1995 and 20 September 1996. The food plants, *Convolvulus* and *Calystegia*, are absent from Shetland except as garden plants. The only suitable plant at the site was imported as a root many years ago.

PAPILIONIDAE

Papilio machaon (L.) Swallowtail

Vagrant: two records, at Voe on Mainland in August 1994 and on Fair Isle in September 1995 have already been reported (Pennington 1996).

PIERIDAE

Pieris napi (L.) Green-veined White

Vagrant: one seen on Bressay on 6 July 1994 (Dr Chris Smout and John Scott). No specimen was obtained but there was a considerable immigration that day including many Red Admirals *Vanessa atalanta* and hoverflies (Diptera: Syrphidae).

GEOMETRIDAE

Timandra griseata (Peters.) Blood-vein

Vagrant: four records, one at light at Ocrabooy, South Mainland on 11 August 1996 (George Petrie) followed by three singles on consecutive nights at Eswick, Central Mainland on 12-14 August 1996.

Scopula imitaria (Hb.) Small Blood-vein

Vagrant: one record, one at Norwick, Unst on 8 August 1994 (Jim Platts, specimen retained by collector).

Orthonama obstipata (Fabr.) The Gem

Vagrant: two records, both at light at Eswick, Central Mainland on 23 October 1994 and 18 August 1996.

Epirrhoe alternata (Müll.) Common Carpet

Vagrant: one record, on sugar at Eswick, Central Mainland on 11 August 1996 during a period of considerable immigration.

Thera cognata (Thunb.) Chestnut-coloured Carpet

Resident: larvae tapped from the food plant on Juniperus on Collafirth Hill, North Mainland in July 1996, the bred specimens being extremely dark (Brian Elliott, specimens retained by the collector). The food plant is very local in Shetland and the moth is unlikely to be found away from the vicinity of this record, although Muckle Roe may be worth searching.

Eupithecia centaureata ([D. & S.]) Lime-speck Pug

Status uncertain: three records at light on Foula on 12 August 1996 (Frances Ratter) and at Eswick, Central Mainland on 13 and 22 August 1996. While this species could be an overlooked resident, August 1996 was a time of considerable immigration.

E. assimilata Doubl. Currant Pug

Resident: found to be present at Eswick, Central Mainland in June to July 1995 and 1996 with larvae found on *Ribes* there in September 1996.

E. lariciata (Freyer) Larch Pug

Resident: found to be locally common on *Larix* at Kergord, Central Mainland in July 1996 (TDR and Svend Kaaber).

Agriopsis marginaria (Fabr.) Dotted Border

Resident: bred from larvae collected from the Burn of Valayre, Central Mainland in July 1996, adults emerging in late February 1997 (Brian Elliott, specimens retained by the collector). Intriguingly, geometer moths were reported seen in car headlights a few hundred metres from this site in March 1996.

Erannis defoliaria (L.) Mottled Umber

Resident: an infestation of larvae on just about every species of deciduous tree at the plantations at Kergord, Central Mainland was first noticed in July 1996, and males were found flying there in November. The species must have been present for several years given the numbers present, but it is probably a recent arrival brought in with trees planted at the site.

ARCTIIDAE

Arctia caja (L.) Garden Tiger

Vagrant: one at light at Easter Quarff, South Mainland on 28 July 1995 was followed by seven, at three sites on Mainland and on Yell and Unst in August 1996.

NOCTUIDAE

Agrotis segetum ([D. & S.]) Turnip Moth

Vagrant: nine records, all at Eswick, Central Mainland on 15 July 1994, 23 October 1994, four in September-October 1995, 13 June 1996 and two on 24 August 1996.

Ochropleura plecta (L.) Flame Shoulder

Status uncertain: three records on Foula on 25 June 1996 and two on 22 July 1996 (Frances Ratter). Presumably an overlooked resident, but possibly a wanderer from nearby populations in Orkney.

Noctua fimbriata (Schreb.) Broad-bordered Yellow Underwing

Vagrant: at least eight records, the first at light at Toab, South Mainland on 8 August 1994 (Jon and Ad Clifton) and at light at Eswick, Central Mainland on 30 August 1995, followed by at least six at four sites on Mainland and Unst in August 1996.

N. interjecta Hb. Least Yellow Underwing

Vagrant: one record at light at Eswick, Central Mainland on 19 August 1996.

Xestia triangulum (Hufn.) Double Square-spot

Vagrant: one record at light at Eswick, Central Mainland on 29 July 1995.

Lacanobia suasa ([D. & S.]) Dog's Tooth

Vagrant: about twelve records – one at light at Baltasound, Unst on 23 July 1996 was followed by about 11 at two sites on Mainland and two sites on Unst between 12-16 August 1996.

Papestra biren (Goeze) Glaucous Shears

Presumed resident: the only record involves about 12 at light or sugar at Eswick, Central Mainland between 26 May and 13 June 1995.

Xanthia icteritia (Hüfn.) The Sallow

Status uncertain, probably vagrant: ten records, all on sugar, and mostly at Eswick, Central Mainland where there were three in early August 1994, three in August to September 1995 and one in August 1996. There were also singles at Veensgarth, Central Mainland (Paul Sclater), Fetlar (Daniel Houghton) and Baltasound, Unst in August 1996. Most of these records are rather early for Scotland, making immigration from earlier flying southern populations more likely.

Amphipyra berbera (L.) Svensson's Copper Underwing

Vagrant: one record, at sugar at Eswick, Central Mainland on 11 August 1996.

Enargia paleacea (Hb.) Angle-striped Sallow

Vagrant: five records, all on 12 August 1996 - by day at Skaw, Unst (Wendy Dickson), on sugar at Baltasound, Unst and three on sugar at Eswick, Central Mainland.

Parastichtis suspecta (Hb.) The Suspected

Vagrant: about 20 records, about 18 on sugar at Eswick Central Mainland on 12-14 and 24 August 1996, and three on sugar at Baltasound, Unst on 13-14 August 1996.

Cosmia trapezina (L.) The Dun-bar

Vagrant: over 20 records, about 17 at three sites on Mainland and two on Unst (Jim Platts) between 1-8 August 1994, and another five at Baltasound, Foula and Eswick, Central Mainland on 12-13 August 1996.

Apamea lateritia (Hufn.) Scarce Brindle

New to Scotland. Vagrant: two records, on sugar on consecutive nights at Norwick, Unst on 11-12 August 1996. These are the 8th-9th British records. This species was commoner than usual in Denmark in 1996 and was also recorded from the Faroes on 10 August 1996 (Svend Kaaber *pers. comm.*).

A. ophiogramma (Esp.) Double Lobed

Vagrant: five records, on sugar at Baltasound, Unst on 7 and 14 August 1996, singles at light and sugar at Norwick, Unst on 12 August 1996 and at light at Eswick, Central Mainland on 12 August 1996.

Mesoligia furuncula ([D. & S.]) Cloaked Minor

Vagrant: two records, singles on consecutive nights on sugar at Ocracuoy, South Mainland on 11 August 1996 (George Petrie) and at sugar at Eswick, Central Mainland on 12 August 1996.

Mesapamea didyma (Esp.) Lesser Common Rustic

Presumed resident: one record, on sugar at Eswick, Central Mainland on 18 August 1996. The Common Rustic *Mesapamea secalis* (L.) has only been confirmed in the islands from three specimens, although there are several records of *secalis sensu lato*.

Photedes minima (Haw.) Small Dotted Buff

Status uncertain: five records at light at Eswick, Central Mainland in late July and early August in each year 1994-96 would suggest a small local population.

Luperina testacea ([D. & S.]) Flounced Rustic

Status uncertain: one record, at Norwick, Unst on 4 August 1994 (Jim Platts, specimen not retained).

Amphipoea fucosa (Freyer) Saltern Ear

Vagrant: a small influx of over 30 *Amphipoea* between 1-17 August 1994, of which the majority were probably this species, with nine specimens from Norwick, Unst (Jim Platts) and Eswick, Central Mainland confirmed by dissection, as was another from Muckle Roe on 31 August 1994. The Large Ear *Amphipoea lucens* (Freyer), first recorded on Fair Isle in 1991, was also present in this influx and the 14 *Amphipoea* recorded in 1995-96 were all this latter species.

Spodoptera exigua (Hb.) Small Mottled Willow

Vagrant: seven records in August 1996, two at Veensgarth, Central Mainland on 13th (Paul Sclater), four at Ocracuoy, South Mainland on 13-16th (George Petrie) and one at Eswick, Central Mainland on 14 August 1996.

Macdunnoughia confusa (Steph.) Dewick's Plusia

Vagrant: two records, different singles at light on consecutive nights at Eswick, Central Mainland on 12 and 13 August 1996. There is one previous Scottish record in Orkney in 1969 (Lorimer 1983).

Autographa bractea ([D. & S.]) Gold Spangle

Vagrant: one record, flying by day at Baltasound, Unst on 19 August 1996 (Margaret MacLeod). No specimen as the moth evaded capture.

Amendments

There is no room to list other interesting records but two errors from Pennington and Rogers (1994) need correcting. The gelechiid *Scrobipalpa acuminatella* (Sircom) should be deleted from the Shetland list as the specimens have been redetermined as the tineid *Monopis laevigella* ([D. & S.]). The Red-green Carpet *Chloroclysta siterata* (Hüfn.) should also be deleted from the list as all specimens have now been identified as Autumn Green Carpet *Chloroclysta miata* (L.) (det. Barry Goater and Mark Young). In addition the pyralids *Agriphila geniculea* (Haw.) and *Agriphila inquinatella* ([D. & S.]) referred to in Pennington (1997) should be ignored as they were provisional identifications, now redetermined, while the references to *Yponomeuta padella* (L.) refer to the records of *Y. cagnagella*.

Discussion

Of the 86 additions to the Shetland list in 1994-96, only about 29 species are believed to be resident. Of these the majority are microlepidoptera, which is not surprising as these moths are always somewhat overlooked. Although many species are known only from a few specimens, they include several very inconspicuous species and several species with spring or early summer emergence which would have avoided capture by visiting entomologists, most of whom visited later in the year. Newly discovered resident macrolepidoptera include five species of geometrid, three probably imported by man along with trees and shrubs (*Eupithecia lariciata*, *Eupithecia assimilata* and *Erannis defoliaria*), one with a very localised food plant (*Thera cognata*) and one flying very early in the year (*Agriopis marginaria*). Two new resident species of noctuid include one which has only recently been recognised as a distinct species (*Mesapamea secalella*), and one which flies early in the Shetland spring (*Papestra biren*), thereby escaping detection by visitors.

In general, macrolepidoptera of uncertain status in Shetland are probably scarce residents which may be immigrants (although *Xanthia ictertia* is more likely to be a migrant). Most of the microlepidoptera of uncertain status, however, are species which have occurred just once or twice during periods of immigration, but which are not accepted migrants and which also have possible food plants available in the islands. It is recognised that these species may be scarce or local residents in the islands recorded during periods of immigration, either through increased observer effort or because they have wandered from their usual range within Shetland. However immigration is a distinct possibility.

Excluding one species known to be an accidental import by man, this leaves 39 species out of our list of 86 additions which are most likely immigrants from outside Shetland. This list of immigrants makes interesting reading. While the two *Yponomeuta* species are well established migrants, members of the Oecophoridae and the Gelechiidae are not usually accepted migrants or even long distance wanderers. Both *Agonopterix alstromeriana* and *Scrobipalpa instabilella* are assumed to be immigrants as their food plants are absent from Shetland and they were recorded during periods of immigration. It is worth noting that most of the other recent additions from these two families are of uncertain status, and several are strongly suspected of being immigrants (e.g. *Scrobipalpa atriplicella*). Even one of the suspected residents, *Agonopterix nervosa*, has been recorded as an immigrant on Foula. Four species of tortricid are immigrants, including *Epinotia nisella* and *Rhopobota naevana* where there is evidence from Orkney to support the theory (Lorimer 1983 and unpub.), and *Lobesia abscisana* and *Epiblema foenella* which are so far outside their normal range that they must be immigrant. The occurrence of one specimen of *L. abscisana* in 1994 was regarded with incredulity by several authorities, but the arrival of more than 20 in August 1996 must lead to some reappraisal of its status. Several tortricids of uncertain status will probably be confirmed as immigrants in the long term (e.g. the records of *Hedya* sp.). Of the nine recent additions to the Shetland pyralid list no less than eight are immigrants. Although some famous migrants are included, such as *Udea ferrugalis*, *Euchromius ocella* and *Margaritia sticticalis*, species such as *Numonia advenella*, *Pediasia aridella*, *Platytes alpinella* are much less expected. These records are however, similar to another previously unpublished record of Thistle Ermine *Myelois cribrella* (Hb.), caught at light on Fair Isle on 12 June 1992 (Nick Riddiford, det. by the late Ian Lorimer).

Butterflies are less surprising immigrants and most of the whites in the family Pieridae are known to wander, as are the continental subspecies of *Papilio machaon*. It is worth noting that of 13 species of butterfly on the Shetland list only one is resident (Pennington 1993b). Many species of macrolepidoptera are also known to wander widely even if they are not established migrants although the geometrids are generally less mobile. The recent additions to the Shetland list include one well known migrant (*Orthanoma obstipata*), another for which some degree of wandering is well established (*Timandra griseata*) and two slightly more surprising species (*Scopula imitaria* and *Epirrhoe alternata*). Only four of the nine additions to the Shetland geometrid list are suspected immigrants, but no less than 16 of the 22 additions to the noctuid list fall in this category. Most of the noctuids added to the list are known migrants or have a known tendency to wander, with *Amphipyra berbera* perhaps the most surprising name on the list.

The word immigrant has been used advisedly in this account, and in preference to the word migrant whenever possible. Migration is a term that is

difficult to define when working with insects, as discussed by Young (1997). Young tried to make a distinction between migration, implying a definite directional movement from one specific place to another and dispersal, which is more random and usually over a shorter distance. However, he acknowledged the problems with these definitions, while Baker (1982) drew no distinction and termed all movements from one spatial unit to another as migration. The term itinerancy is advocated by Parsons (1996) as better suited to describing the more random and less intentional movements of insects. However, as immigrant merely implies an arrival from outside an area, this term seems especially appropriate for use when discussing an isolated island group such as Shetland.

If one ignores the island of Fair Isle, Shetland is more than 50 km from the nearest land, and this is also an island group, the neighbouring archipelago of Orkney. Shetland is almost 200 km from the mainland of Scotland and over 300 km from Norway. Clearly any immigrant moth has travelled over a considerable distance before it reaches Shetland, even if it has come from the nearest land. However, the conditions most suitable for immigration into the islands, whether it involves birds or insects, always coincide with south-easterly winds. There is plenty of evidence to show that birds which arrive in Shetland in south-easterlies have been deflected from a crossing of the North Sea and many originate in southern Scandinavia or the Low Countries (see for example Robertson, 1980). It seems highly likely that many of the moths and other insects that occur in Shetland during south-easterly winds originate in similar areas. Back-tracking of the moths involved in the peak of the 1996 influx on 13 August suggested an original departure from continental Europe in Denmark or the southern Baltic (Davey, 1997). Some moths may of course originate further east and there is some evidence to support this theory (Bretherton, 1983).

Wind directions away from the south-eastern quadrant are much less productive. If the wind moves into the north-east the temperature tends to drop, inhibiting insect activity, while bird immigration also tends to be minimal. If the wind moves to the south relatively few insect migrants arrive in Shetland, presumably because the landmass of Britain lies in the way and intercepts most long-distance immigration. A few long distance migrants such as *Vanessa atalanta* or *Orthonama obstipata* may occur in southerly winds and a few moths have occurred which may have wandered from the north of Scotland, such as *Agrochola circellaris* or *Amphipyra tragopoginis*. However, even these species occur more regularly during south-easterlies.

If most of the immigrant moths arriving in Shetland leave land in the south-east corner of the North Sea in the vicinity of Denmark this would require a minimum sea-crossing of about 800km, although some species may originate even further east. While this is now accepted as a reasonable distance for the known migrant species such as *Plutella xylostella* (L.), *Autographa gamma* or *Vanessa atalanta*, it is a considerable distance for

dispersing or itinerant species. Although several of the more interesting records are not proven to be immigrants, it is certainly worth considering the idea that even some sedentary species may be capable of longer distance movements than is currently accepted. It may be that some of the moths have been "caught up" by a passing migration. It is accepted that most species have some sort of dispersive period and possibly a large-scale migration occurring when they are in this phase may attract them in some way and lead to a greater dispersion that would occur in normal circumstances. It is interesting to note the range of unexpected immigrants recorded in 1994 and 1996 which feed on coastal or saltmarsh plants (e.g. *Coleophora asteris*, *Scrobipalpa atriplicella*, *Scrobipalpa instabilella*, *Eucosma lacteana*, *Pediasia aridella*, *Platytes alpinella*, *Apamaea oblonga* (Haw.)). If these species had got caught up with a movement crossing the Danish coast in a south-easterly they would be carried out to sea very quickly, with Shetland probably the first landfall. This is supposition of course, but it is difficult to see why these species turn up in Shetland otherwise. Svend Kaaber (*pers. comm.*) has confirmed that most of the vagrants and possible vagrants recorded in Shetland over the last few years are common in the coastal areas of the south-east North Sea around Denmark and adjoining areas.

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BOOK REVIEW

Grasshoppers and Crickets of Essex by Alan Wake. 57 pages, 34 maps, 8 coloured plates. A5, folded and stapled. ISBN 0410 993X. Colchester Natural History Society, 1997. Available from Museum Resource Centre, 14 Ryegate Road, Colchester, Essex, CO1 1YG. £6 inclusive of postage.

Historically, grasshoppers and crickets are a much neglected Order of insects in Britain and with such a high proportion of British species concentrated in the south of the country it is fitting that a southern-county fauna of this nature should be briefly reviewed in a national journal. As with most county works nowadays, distribution is presented on the basis of tetrads (2km x 2km squares), but a very interesting addition in this work is an Appendix of maps showing distribution by monads (1km x 1km squares); this gives a much more accurate representation of the true spread of each species in the county and is most helpful.

However, this work is rather more than just a set of maps. An Essex Orthoptera checklist is followed by a history of Essex grasshoppers and crickets which makes quite interesting reading. A further chapter introduces the survey; two maps summarise numbers of species by ten-kilometre grid square and a table is presented giving a year by year summary of numbers of records of each species from 1980 to 1991. Short but useful accounts for each of the sixteen species present today in Essex follow. A centre-fold of four pages containing eight coloured plates illustrates the work. An interesting addition is a section which now follows listing historical records not re-found during the present day survey. The work concludes with a chapter on key grasshopper and cricket sites in the county.

All in all this is a useful work of reference. Although primarily of local interest, it may have a wider appeal, at least to entomologists in the southern part of Britain.

Colin W. Plant

FLORIDA BUTTERFLIES RECORDED DURING MARCH-APRIL, 1981

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FLORIDA IS OF particular interest to Lepidopterists because of its geographical location on the continent of North America: it is a peninsula surrounded by the sea on three sides. Some of the butterflies are native, some migrants, whilst some are common to other parts of mainland North America as well as to the Caribbean islands to the south and south-east, and Central and South America (Barcant, 1970; Lewis, 1974; Riley, 1975; Harris, 1989; Gerberg & Arnett, 1989; Scott, 1992).

Florida is one of the United States most affected by building development in recent decades, particularly for the tourist industry. Hence land utilisation is changing rapidly, as consequently are fragile habitats and their associated butterfly faunas. Clearly, such faunas need to be monitored temporally as well as spatially in order to determine which species are under special threat from land development.

Between 28 March and 10 April, 1981, HDL visited Florida on an entomological and ornithological field trip. During this time, voucher butterfly specimens were collected throughout the state and identified. In this paper, we present a list of the species recorded, along with a brief discussion of the findings. We hope that this information may be useful to other entomologists studying the spatio-temporal dynamics of the butterflies of this region.

Species recorded

The scientific and English names used follow Scott, 1992. The number of examples recorded is given in brackets after each entry.

Family PAPILIONIDAE

Tribe Leptocircini: Kite Swallowtails

Eurytides marcellus Cramer Zebra Swallowtail

Ocala Nat. Forest, near Gainesville, 2.iv. 1981 (2); Osceola Nat. Forest, near Lake City, 2.iv.1981 (1)

Tribe Papilionini: Fluted Swallowtails

Papilio cresphontes Cramer Giant Swallowtail

Keys, 9.iv.1981 (1); Key West, 10.iv.1981 (1)

P. troilus Linnaeus Spicebush Swallowtail

Florida Caverns, Marianna, 1.iv.1981 (1)

P. palamedes Drury Laurel Swallowtail

Osceola Nat. Forest, 2.iv.1981 (1); Lake Woodruff Nat. Wildlife refuge, near De Land, 2.iv.1981 (1)

Family PIERIDAE**Subfamily Coliadinae: Sulfurs**

Colias eurytheme Boisduval Orange Sulfur

Lake Okeechobee, near Okeechobee, 5.iv.1981 (4)

Phoebis sennae Linnaeus Cloudless Sulfur

Newman's Lake, Gainesville, 2.iv.1981 (1)

P. agarithe Boisduval Large Orange Sulfur

Keys, 9.iv.1981 (1)

P. philea Linnaeus Orange-barred Sulfur

Key West, 10.iv.1981 (3)

Eurema daira Godart Barred Sulfur

Ocala Nat. Forest, Gainesville, 2.iv.1981 (1); Tamiami Trail, near Miami, 28.iii.1981 (1); Keys, 9.iv.1981 (1)

Nathalis iole Boisduval Dainty Sulfur

Turkey Point, near Florida City, 6.iv.1981 (4)

Subfamily Pierinae: Whites

Pieris protodice Boisduval & Leconte Chequered White

Lake Okeechobee, near Okeechobee, 5.iv.1981 (3)

Ascia monuste Linnaeus Southern White

Flamingo, south Florida, 7.iv.1981 (1); Keys, 9.iv.1981 (1)

Appias drusilla Cramer Tropical White

Keys, 9.iv.1981 (1)

Family NYMPHALIDAE**Subfamily Satyrinae: Satyrs**

Hermeuptychia hermes Fabricius Southern Satyr

Cottdale, near Marianna, 31.iii.1981 (1)

Megisto cymela Cramer Little Wood Satyr

Newman's Lake, Gainesville 2.iv.1981 (1)

Tribe Nymphalini: Varied Brush-Footed butterflies

Marpesia petreus Cramer Red Dagger Wing

Everglades 7.iv.1981 (1)

Anartia jatrophae Johanssen White Peacock

Turkey Point 6.iv.1981 (4)

Precis coenia Hübner Buckeye

Lake Woodruff, 2.iv.1981 (1); Merritt Island, 3.iv.1981 (1)

Vanessa atalanta Linnaeus Red Admiral

Newman's Lake, Gainesville 2.iv.1981 (1)

Tribe Melitaeini: Checkerspots and Crescents*Phyciodes tharos* Drury Pearl Crescent

Ocala Nat. Forest, 2.iv.1981 (1); Florida Caverns, Marianna 1.iv.1981 (1)

P. phaon Edwards Mat-Plant Crescent

Turkey Point, 6.iv. 1981 (1)

P. frisia Poey Black Crescent

Keys, 9.iv.1981 (1)

Tribe Heliconiini: Longwings*Dione vanillae* Linnaeus Gulf Fritillary

Tamiami Trail, Miami, 6.iv.1981 (1)

Heliconius charitonia Linnaeus Zebra Long Wing

Key West, 10.iv.1981 (2)

Family LYCAENIDAE**Subfamily Lycaeninae, Tribe Theclini: Hairstreaks***Strymon melinus* Hübner Grey Hairstreak

Keys, 9.iv.1981 (1)

Tribe Polyommagini: Blues*Leptotes cassius* Cramer Tropical Striped Blue

Upper Matecumbe Key, Keys, 9.iv.1981 (2)

Family HESPERIIDAE**Subfamily Hesperinae: Grass Skippers***Copaeodes minima* Edwards Tiny Skipper

Lake Okeechobee, near Okeechobee, 5.iv.1981 (1)

Asbolis capucinus Lucas Palm Skipper (The Monk)

Key West, 10.iv.1981 (1)

Panoquina panoquin Scudder Salt-Marsh Skipper

Merritt Island 3.iv.1981 (4)

Subfamily Pyrginae: Herb, Shrub, and Tree Skippers*Urbanus proteus* Linnaeus Long-Tailed Skipper

Key West 10.iv.1981 (2)

Thorybes bathyllus Abbot & Smith Eastern Cloudy Wing

Lake Woodruff, 2.iv.1981 (1)

Erynnis brizo Boisduval & Leconte Banded Oak Dusky Wing

Ocala Forest, Gainesville 2.iv.1981 (2)

Discussion

The recorded species were identified using the field guides of Barcant (1970), Lewis (1974), Riley (1975), Harris (1989), Gerberg & Arnett (1989) and Scott (1992). The last work, which is comprehensive and generally excellent, unfortunately does not list the authors of specific names.

In all, thirty two species were recorded during the period 28 March to 10 April, 1981, some 5% of the total of 679 butterflies listed for North America by Scott (1992). All the species recorded fall within the distributions presented by Scott (1992) for North America, and are either native subtropical species (*M. petreus*; *A. jatrophae*) or predominantly resident subtropical/eastern deciduous forest species of the Florida peninsula/ Keys and south-eastern States (eg. *A. drusilla*, *P. frisia*, *H. charitonia*, *A. capucinus*), with year-round ranges. Many of the species recorded are migratory to a greater or lesser extent (e.g. *P. philea*, *P. agarithe*, *L. cassius*, *U. proteus*, *V. atalanta*). *V. atalanta*, a renowned migrant of both the Old and New Worlds, has at least four flights throughout the year in southern Florida, southern Texas and lowland California (Scott, 1992). In conclusion, from this brief survey, the species recorded are typical for Florida and no 'unusual' species were found in terms of geographical distribution or phenology.

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The Portland Ribbon Wave *Idaea degeneraria* Hb. (Lep.: Geometridae) on the Isle of Wight

I captured an example of the Portland Ribbon Wave *Idaea degeneraria* at m.v. light at Freshwater, Isle of Wight, on 11 August 1997. This appears to be only the second record for the island; the first was taken at Sandown as long ago as 5 September 1902 (Prout, 1902, *Ent. Rec.* **14**: 274). No doubt this was an immigrant, since both the Silver-Y *Autographa gamma* L. and the pyralid *Udea ferrugalis* Hb. were also taken on the same night.— S.A. KNILL-JONES, Roundstone, 2 School Green Road, Freshwater, Isle of Wight.

**CAMBERWELL BEAUTY *NYMPHALIS ANTIOPA* L.
(LEP.: NYMPHALIDAE): FIRST RECORDED BREEDING IN
BRITAIN?**

HOWARD MENDEL

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There are numerous references to the "fact" that there have been no breeding records of *Nymphalis antiopa* in Britain, recent instances (Bowles, 1996; Tunmore, 1996) presumably following the statement in Emmet and Heath (1989) that "*None of the earlier stages has been found in the wild in Britain*". The prospect of butterflies from the 1995 migration emerging from hibernation and breeding stimulated considerable discussion. The possibility that spring migrants might supplement small numbers surviving hibernation (Plant, *antea*, 149-150) increases the likelihood of breeding in Britain.

There is already some evidence that *N. antiopa* may have bred in Britain. Butterfly records in *Notes or jottings about Aldeburgh* (Hele, 1870) were abstracted for *The Butterflies of Suffolk* (Mendel & Piotrowski, 1986) but only later did I realise that there was an updated 2nd edition (Hele, 1890) of this interesting book. I quote, *verbatim*, the relevant passage (p. 101) in this 2nd edition:-

"Camberwell Beauty (v. antiopa) was found clinging to a post on the Aldeburgh Park estate, in 1876. It had just emerged, for the wings were limp, and partially expanded. These subsequently developed most perfectly. The specimen is in the possession of Mr. H. Wightman, of this town."

Nicholas Fenwick Hele (1859-1892) was a competent naturalist and carefully recorded the natural history of the Aldeburgh area of the Suffolk coast. He was respected by his peers and succeeding generations of Suffolk naturalists have found no reason to question his reputation.

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**Roesel's bush-cricket *Metrioptera roeselii* (Hagenbach)
(Orth.: Tettigoniidae) in Oxfordshire**

A male of the fully-winged form *diluta* Charpentier of Roesel's bush-cricket was taken by me near Watlington, Oxfordshire (grid reference SU 700940) on 8 August 1997.

Ragge (1965) *Grasshoppers, Crickets and Cockroaches of the British Isles*) does not mention Oxfordshire for this distinctive cricket and there are similarly no records for the county in the more recent works by Paul (1989) *Grasshoppers and Crickets of Berkshire, Buckinghamshire and Oxfordshire*) and Haes & Harding (1997, *Atlas of grasshoppers, crickets and allied insects in Britain and Ireland*).

Comparison of the distribution map in the latter work with that produced by Haes some eighteen years earlier (1979, *Provisional atlas of the insects of the British Isles. Part 6: Orthoptera*), shows clearly that in recent years this species has spread westwards. There are, however, only two Oxfordshire vice-county records held on the database at the Biological Records Centre at Monks Wood, from Shipdale (grid reference SU 77) in 1992 and from Henley-on-Thames (grid reference SU 78) in 1993.

The insect was first noticed because of its distinctive "song" and, in spite of the suggestion by Ragge (*op. cit.*) that it may be easily taken with a net, evaded capture for a full three quarters of an hour!

I am grateful to Dr Henry Arnold at the Biological Records Centre (Monks Wood) for information on existing Oxfordshire records of this species and to the Editor for helpful suggestions in the preparation of this note.

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**The Channel Islands Pug *Eupithecia ultimaria* (Boisd.)
(Lep.: Geometridae) new to the Isle of Wight**

Brian Warne organised members of the Isle of Wight Natural History and Archaeological Society to beat tamarisk bushes in various localities on the Isle of Wight in a bid to find larvae of the Channel Isles Pug here, during the second half of July 1997. The operation was successful at Bembridge (over a dozen larvae found), Niton (one) and St Lawrence (one) and the first adults emerged from these on 9 August. Other pug larvae were also beaten from this foodplant and these proved, on emergence as adults, to be the Double-striped Pug *Gymnoscelis rufifasciata* (Haw.).

It would appear that *E. ultimaria* is present in the east of the island and has not spread to western localities; this compares to the spread on the mainland where it has been found at Southsea and Hayling Island but not further west (Langmaid, 1996, *Ent. Gaz.* **47**: 239 - 240).— S.A. KNILL-JONES, Roundstone, 2 School Green Road, Freshwater, Isle of Wight.

**THE LIMWOODS OF CENTRAL LINCOLNSHIRE AND THEIR
MOTHS INCLUDING FLETCHER'S PUG
EUPITHECIA EGENARIA H.-S. (LEP.: GEOMETRIDAE)**

GERRY HAGGETT

Meadows End, Northacre, Caston, Norfolk.

PAUL WARING'S ACCOUNT (*antea*, 1-9) of the expeditions mounted in 1995 to the limewoods of central Lincolnshire reads as though previous working had failed to reveal very much. In fact the majority of the species that he lists in his Table 2 were already well known from records compiled by Ric Pilcher and myself; these derived from Ric Pilcher's own work before I arrived on the scene in 1971, and from my own considerable records from the next seven years which were passed to him but evidently escaped inclusion into Duddington and Johnson (1983), with only the most significant of my work added later that year in an apologetic *addendum*.

It is however, about the recent history of the woodlands themselves that I would first seek to write because the present state of these precious woods and their facilities derive largely from the efforts and determination of unsung heroes who were active in protecting them in earlier decades.

The majority of the *Tilia cordata* limewoods formed part of the then Forestry Commission estate of North Lincolnshire which from its early days had been managed on traditional forestry practice with oak *Quercus* as the principal tree planted on the heavy clay soils, often with Scots pine *Pinus sylvestris* and Norway spruce *Picea abies* intended for later removal. The main core of the Bardney string of woods is Chambers which itself is a scatter of ancient limewoods linked by former agricultural land that was planted with the traditional tree mixtures. In late post-war years economic dictum drove the Forestry Commission into plans to eradicate the oak and natural broad-leaved species for timber production; this was attempted by use of herbicides, applied by hand sprayer or by aerial spray from fixed-wing aircraft. Most of the native broad-leaved areas had been felled in the 1939-45 war and no work had been done since, so there was lime coppice growing with ash *Fracinus exelsior*, oak, field maple *Acer campestre* and birch *Betula* into high forest, much of it standing in water with rides impassable even if traceable. The oldest stands in Great West Wood and Hatton Wood had survived because of their unprofitable timber size at war-time coupled with remoteness, that inhibited timber extraction. All woods indeed owed their escape from earlier conversion to agriculture because of their valley bottom sites on the heaviest land.

During those long years of unenlightenment, the Forestry Commission promoted to top positions those most likely to achieve the economic criteria being set and few were brave enough to put their heads above the parapet; it is said that there is always a man for the right occasion in life and such a man chanced to be given the top administrative job to oversee the Eastern

England empire in 1970 and although he was in post for all too short a time it was he who arranged for me to move to Bardney to do the job of Chief Forester, whose domain ran from the Nottinghamshire border to Somercotes plantations on the very east coast (and where I was to find *Ethmia bipunctella* Fabr. larvae on *Echium* (*Ent. Rec.* **90**: 275); I inherited a team of foresters sickened at the carnage and enthusiastic for change alongside a chief-of-staff veteran of Forestry Commission accounting who would manage for me the hefty budget.

Damage done by 1971 was breathtaking; the herbicide 2,4,5-T applied in diesel had been the main instrument of destruction, sprayed on cleared sites in such flood that the forest workers told how the ground ran rivers and how the land stank; when clearance of young broad-leaved trees was too expensive the jim-jem was used, a diabolical invention that chopped into the base of a young lime and then injected poison. The tenacity of the native broad-leaved root-system defied death but produced malformed and stunted growth through which western American shade-bearing conifers were planted. The wettest open areas became choked with *Calamagrostis* and only the better drained were stocked with Corsican pine. In outlying woods, aerial spraying had the ironic effect of stunting the spruce but allowing the oak to recover and these woods I believe have since been sold. The whole dismal programme was a disaster for both site and taxpayer.

Coming green into this mayhem, I quickly found that while the Nature Conservancy staff had been making representation for long enough, they all, from ancient woodland specialist George Peterken to local officer Mike Schofield, regarded Forestry Commission staff to be equally tainted, so I could never achieve with them the rapport I hoped for; the luminaries and wardens of the Lincolnshire Trust for Nature Conservation also regarded me with suspicion that has taken long to dispel. Neighbouring farmers wanted only one thing in life, which was the conversion of the woods to add to their acreage, already of prairie proportions, and I soon ran into hostility when I expressed astonishment that I was expected to deepen drains through and around these lovely woods for farmers' benefit. As local farmers comprised the working end of the Internal Drainage Board I found myself assailed on all sides as I evolved a policy of drain maintenance to existing levels and by permit, after which drainage demands ceased, although relations never improved.

Although the economic direction of the Forestry Commission remained dominant until comparatively recent times, I was fortunate then in being able to reverse the programme of coniferisation at Bardney and to switch money for labour and machine use to a massive scheme of ride widening and ride drainage to which the forest workers responded with great heart and huge success. But it was the response by nature that gave the greatest pleasure, in place of mud and jungle grew swards of primrose *Primula vulgaris*, bluebell *Endymion non-scriptus*, cowslip *Primula veris* and anemone *Anemone*

nemorosa and within the opened woodland canopy the famed lily-of-the-valley *Convallaria majalis* beds blossomed as never before, the blackthorn *Prunus spinosa* and sallows at ride edge gave of their best and my slide collection of this awakening remains amongst my happiest. An early reward was to see White Admiral *Ladoga camilla* appear as the advance guard of their re-occupation of the county and later a single male Silver-washed Fritillary *Argynnis paphia*. Ride awakening brought its own problems when distant executives became alarmed at the accruing cost, but more down to earth were the local Hunts, two of which met at Chambers and both wished to continue the joy of their full field charging tally-ho up and down the newly levelled rides. I learned to resist the bribe of the Hunt-Ball, even the invitation to ride (God forbid!) and other better-concealed pressures, but we ended up good friends with only the Huntsman entering to draw and the field politely restrained at the gate; I even later had lunch with the senior Hunt Master.

Once a form of access was made it became possible to offer thinnings of the better-grown, younger limewoods poles for standing sale, again incurring displeasure from head office that demanded detailed pole measurement on standard forms, whereas we achieved sale by the acre that made possible the thinning of oak, ash and lime by wood bodgers using such antiquated machinery and tractors that Health and Safety rules would not now allow; in this way whole tracts of woods were opened up, first at Ivy Wood, Minting and Great Scrubbs, then on to Great West, Newball and Hardy Gang with the provision that rides were to be made good following the lengthy working of each block.

This programme was sustained for the seven years that I worked there and it attracted increased interest and participation from what is now English Nature and, as always, the Lincolnshire Trust. Not long after I had left, the Forestry Commission made an agreement with the Nature Conservancy Council to declare 270 hectares of limewoods to be managed as a Forest Nature Reserve with a view to restoring coppice whilst managing high forest on long rotation with minimum intervention of the oldest stands. I was hugely pleased to be invited to the inauguration ceremony of the plan at Chambers in 1989.

There must be many folk who have contributed to conservation in the similar broader sense of we who helped restore Bardney limewoods but whose work remains unrecorded. I like to think that they have enjoyed a similar outcome and satisfaction. The history of man's impact on nature and the response of wildlife is the history of our countryside and its flora and fauna and I like to think, too, that those who collect moths or data from sites like the Bardney limewoods might benefit with knowledge of that recent history.

During the whole of my time Lincolnshire, I ran an m.v. trap from the Chambers office and I had abundant opportunity in my daily work to wonder

at the wildlife of the limewoods, to compile maps that charted the appearance of young *Sorbus torminalis* suckers and above all to witness the Lepidoptera. All this while I worked closely with Ric Pilcher at many county sites but especially frequently in the limewoods, my individual records being passed to him. Ric maintained a detailed card index system as part of his scrupulously compiled county data and he was the first modern county recorder for Lincolnshire; presumably this mass of information was made available to Paul Waring along with Johnson's comprehensive update of records to 1995 as well as the printed supplement of the 1983 book.

A few species notes will indicate the difference between one-night stands and regular working; larvae of *Tethea* or D.&S. were numerous on well-grown beds of aspen *Populus tremula* suckers in College Wood, *Hemaris fuciformis* L. regular at Ragged Robin *Lychnis flos-cuculi* in Chambers, some *Acronicta alni* L. neither type nor melanic but of a soft velvety black sheen within rosy dove-grey ground colour, and more *Spaelotis ravidia* D.&S. would fall from the office door frame each morning than were to be found in the trap, a habit that at my garden shed some ten miles away supplied collectors anxious to see this moth; *Photedes fluxa* Hb. so plentiful on *Calamagrostis* in Chambers that I used to examine hundreds in order to pick out the red forms, larvae of both *Philereme vetulata* D.&S. and *P. transversata* Hufn. on Purging Buckthorn *Rhamnus cathartica* within the limewoods and also outside it. The most significant species not recorded by Waring is of course *Photedes extrema* Hb., the only known residential population in Lincolnshire; thorough working of *Calamagrostis* beds in *all* of the limewoods should indicate how strong its presence remains. Of the five pugs given in Table 1, only *Eupithecia valerianata* Hb. was not in these woods in good numbers. Neither Ric Pilcher nor I saw any sign of *Angerona prunaria* L. and despite annual attempts we saw nothing of *Eupithecia egenaria*, either at m.v. light within the limewoods or at the Chambers static trap or by day searching of boles of lime in the older stands. Beating lime flowers was scarcely possible with so much of it out of reach and I found *Tilia cordata* to flower so late that food for *egenaria* larvae might not be available before August of most years. The absence of *T. cordata* seedlings also contrasted with what I have since found in Norfolk, so I had to conclude viability might be reduced further north, but perhaps a higher resident small rodent population might be the answer; however in Norfolk I have seen trees of *T. cordata* with canopy so heavy with fertile seed and bracts in late autumn that the wood wore an orange-yellow mantle the like of which I never saw in Lincolnshire.

Moths like *Epirrhoe rivata* Hb. and *Eupithecia assimilata* Doubleday (abundant as larvae) were known from other habitats and their occurrence in limewoods, like most of the moths in Table 2 of Waring's paper, has no special significance, but then I have never rated most of those listed footman

to be anything other than general in their occurrence in lowland Britain and quite half of the species listed there are noted in Johnson's 1995 updated paper to have been recorded elsewhere in Lincolnshire in most of the years between 1986 and 1995. The moths in Table 2 that most attract my attention are *Hemistola chrysoprasaria* Esp. and *Xestia agathina* Dup., simply because I cannot recall their hostplants from anywhere nearby. In my Table 1 I list those species reckoned to be known nationally only from 31-300 ten km squares that I recorded on the Bardney limewoods in 1971-1978 and that are not noted in Tables 1 and 2 of Waring's paper.

Ric Pilcher found *Schrankia costaeirigalis* Steph. in a number of inland sites from Crowle Waste to Market Rasen to Woodhall; its occurrence within old woodlands awakens one's interest as a potential candidate for *S. intermedialis* Reid but as wing pattern and colour of both taxa are identical that is probably a red herring.

Table 1. List of moths recorded by G.M. Haggett in Bardney limewoods 1971-1978 reckoned to be known from only 31-300 ten km squares in Britain and not recorded by Waring *et al.* in 1995.

Thyatiridae

Polyploca ridens Fab.

Geometridae

Cyclorophora porata L.

Idaea straminata Bork.

Euphyia unangulata Haw.

Eupithecia inturbata Hb.

E. insigniata Hb.

E. valerianata Hb.

E. trisignaria H.-S.

E. tripunctaria H.-S.

Ectopis crepuscularia D.&S.

Notodontidae

Furcula bifida Brahm

Peridia anceps Goeze

Drymonia ruficornis Hufn.

Clostera curtula L.

Arctiidae

Thumata senex Hb.

Noctuidae

Spaelotis raveda D.&S.

Lacanobia w-latinum Hufn.

Mythimna straminea Treits.

Acronicta alni L.

Mormo maura L.

Ipimorpha subtusa D.&S.

Enargia paleacea Esp.

Parastichtis ypsilon D.&S.

Apamea ophiogramma Esper

Amphipoea fucosa Freyer (det. gen.)

Celaena leucostigma Hb.

Archanara dissoluta Treits.

Arenostola phragmitidis Hb.

Coenobia rufa Haw.

Chilodes maritimus Tausch.

Nycteola revayana Scop.

Section 2 of the Addendum paper issued November 1983 by the authors of *Butterflies and Larger Moths of Lincolnshire* 1983 is entitled "Notes on species of particular interest found in the Bardney woodlands and at Lissington between 1971 and 1978, received from Mr Gerry Haggett 16.11.83". That paper was written by me after I had been invited to introduce the book at its launch at a meeting of the Lincolnshire Naturalists Union in the summer of 1983; it was an attempt to fill the most obvious gaps registered in a quick scan of the book which I was seeing for the first time.

That paper does not include some the some moths listed below because I regarded them to be of pretty general occurrence (as I still do) or because they had already been given mention in the Duddington and Johnson (1983). Their status coding is of course a recent innovation.

Reference

Duddington, J. and Johnson, R., 1983. *The Butterflies and Larger Moths of Lincolnshire*. Lincolnshire Naturalists' Union.

OBITUARY

Thomas Cecil Dunn BSc, MSc, MBE

It was with a feeling of great sadness and loss that the naturalists of the north of England learned of the death of Tom Dunn on Monday 21 July 1997.

Born on 8 January 1911 at Edmonsley, County Durham, Tom was the son of a Colliery Railwayman who worked at Pelton Fell, Co. Durham, at that time a large railway junction. It was from the nameplate of one of the small shunting engines on this railway that Tom received his middle name of Cecil. After a basic junior school education Tom won a free place to Chester-le-Street Secondary School (now a Grammar School). Without this, Tom would not have had a higher education as his parents would not have been able to afford the fees. An additional award enabled him to stay at school where he obtained his Higher School Certificates. A further grant partially financed his place at University. The remaining money for his education coming from his violin accompaniment of silent films at local cinemas.

He went on to take a "first" in Botany at Hatfield College in 1932. In this he was in a class of one as Botany was a new subject in the curriculum. After leaving university during the depression, he held a series of temporary teaching posts and obtained further qualifications by way of a City and Guilds Diploma in Woodwork and Engineering Drawing. He found a permanent post shortly before the Second World War at Blaydon, teaching the unemployed men and boys woodwork.

He served with the RAF between 1939 and 1945 installing radio equipment into aircraft.

His marriage at the beginning of the War to Marjory Jude was to produce a son, Alec and a daughter Judith. Tragically his wife passed away whilst still young in 1960. From 1945 to 1971 he taught at the Chester-le-Street Grammar School, initially as a woodwork instructor, and in later years as the biology teacher. His interest in natural history dates from his early schooldays when he collected snails. This initial interest expanded into his lifelong study of botany and entomology.

He joined the Northern Naturalists Union, a confederation of local natural history societies, in 1945 and became assistant editor of *The Vasculum* under his mentor J. W. Heslop-Harrison in July 1963, and then editor in April 1967 on Heslop-Harrison's death; he retained this position until December 1990. A leader of many of the field trips organised by local natural history societies he was constantly asked to identify various "finds". This ability led to him becoming a television personality in BBC television's *Looks Natural* programme in the 1970s.



Thomas Cecil Dunn BSc, MSc, MBE, 1911 - 1997

Photo: Courtesy of North of England Newspapers (Westminster Press Ltd)

Tom was one of the first in the country to operate a Rothamstead Light Trap which was in continuous use in his garden for many decades. For many years he identified the captures of not only his own light trap, but from several others in both counties. He wrote articles for both local and national natural history publications. One of his minor achievements but one which gave him much satisfaction was the detection of the Purple Hairstreak Butterfly *Quercusia quercus* L. on the Scottish island of Colonsay in 1964, but his over-riding interest was in the more localised recording of the plants and insects of Northumberland and Durham. Many of his botanical records found their way into the recently published "Floras" of both counties. The Lepidoptera records he obtained from Co. Durham were combined with

those of Dr. Jim Parrack from Northumberland in a joint publication entitled *The Moths and Butterflies of Northumberland and Durham* issued in two parts as Supplements to *The Vasculum* in 1986 (Macrolepidoptera) and 1992 (Microlepidoptera). For many years prior to the publication of these volumes, a visitor to his home would find the living room table covered with small boxes containing specimens awaiting identification, a file of record cards and his binocular microscope at the ready. His two greenhouses bulged with his large collection of cacti and every visitor was treated to a tour of the garden.

A tireless worker for conservation and in the formation of the Northumberland and Durham Trusts and later the Durham Wildlife Trust his efforts in this field were recognised in 1979 by Durham University, who awarded him an honorary MSc. He was further honoured for his "services to Nature Conservation" when the then Nature Conservancy Council forwarded his name for a proposed MBE. This award was announced in the 1987 Birthday Honours List and he went to Buckingham Palace to be presented to the Queen, a meeting of which he was extremely but quietly proud. A non-smoker and teetotaler Tom was a very fit person and at the age of 72 years climbed Red Pike in the Lake District, a task that would daunt many a younger man. Even in his early eighties he could be seen every day taking his afternoon "constitutional" with his dog which invariably led him to his favourite localities at either Waldrige Fell or Hermitage Woods.

From very humble beginnings he rose through his own endeavours to be one of the most knowledgeable and respected of naturalists and he was certainly the finest microlepidopterist produced by the north of England this century. He had a quiet natural authority, and when he spoke people listened and learnt from what he said. He was a gentleman in every sense of the word.

In 1995 he gifted his collections and those of T. Ashton Lofthouse and J.W. Heslop-Harrison, along with his record cards, to the Sunderland Museum. His departure from our presence leaves a void which will be very difficult, if not impossible, to fill.

Harry T.Eales

An appeal for invertebrate specimens

At the De Montfort University we are building up a reference collection of named invertebrates to be used in the teaching of students. We are particularly seeking insect specimens. Undated specimens are acceptable. If you are able to help, please send specimens direct or telephone to discuss our needs in more detail on 01162 551551.— K.M. STEWART, Department of Biological Sciences, De Montfort University, Scraptoft Campus, Leicester LE7 9SU.

**BUTTERFLIES ON THE ISLAND OF PÁTAMOS (GREECE) IN
APRIL 1995, WITH AN UPDATED CHECKLIST
AND BIOGEOGRAPHIC NOTES
(LEPIDOPTERA: HESPERIOIDEA & PAPILIONOIDEA)**

ALAIN OLIVIER

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THE GREEK ISLAND of Pátmos (32 km²), of volcanic origin, is situated in the south-east Aegean Sea. To the north, it is flanked by the islands of Sámos, Foúrni and Ikaría. To the south, it is more or less connected to the Bodrum Peninsula (Prov. Muğla, Turkey) through a chain of islands, i.e. Lipsí, Léros, Kálimnos, Psérimos and Kós (Fig. 1). Pátmos is covered mainly with garrigue and, in the vicinity of Skála, the main settlement, orchards.

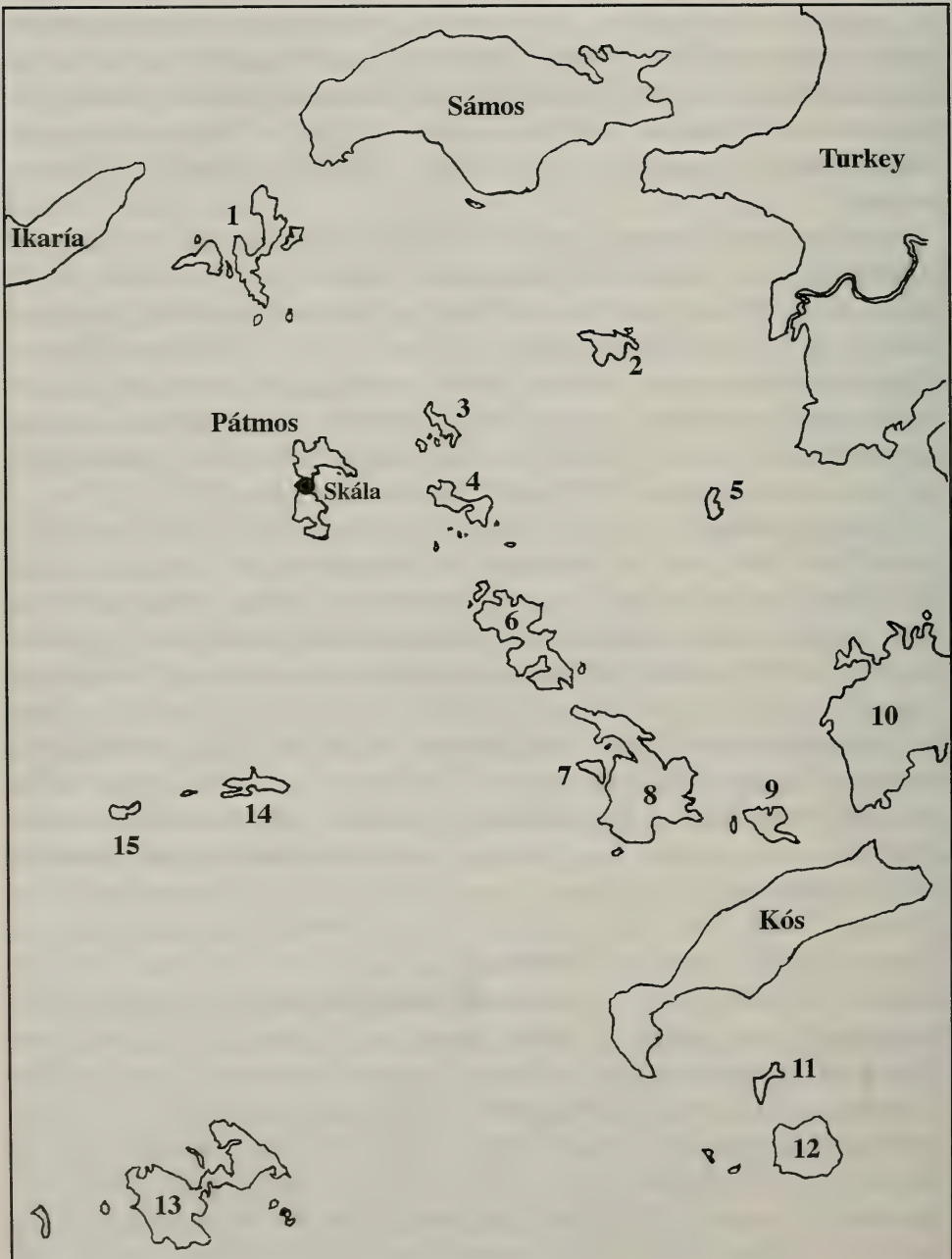
While the island is rather popular with tourists for its famous monastery, it has been largely ignored by lepidopterists. Olivier (1987) traced one single specimen of *Plebeius loewii loewii* (Zell.) in the collection of the Zoological Museum of Amsterdam. That same year, on 15 July, Dr. George Thomson made some observations on this island, recording six additional species. These records were dealt with by Olivier (1990a; 1993). Further quotations can be found in Olivier (1990b), Olivier & Coutsis (1993; 1995), Hesselbarth, van Oorschot & Wagener (1995) and Tolman & Lewington (1997).

I had the pleasure to stay for two days on this charming little island, on 9 & 10 April 1995. All observations were made on the first day in the immediate vicinity of Skála, from sea level up to about 150m, mostly on waste grounds, along roadsides and in orchards. A planned more extensive investigation of the island on the next day had to be abandoned, because of extremely adverse meteorological conditions (windy, rainy weather at very low temperatures and even a hailstorm!). A couple of additional spring butterflies (lycaenids), that are very likely to occur there, thus remain unknown from Pátmos. Nevertheless, 14 species were recorded, nine of which are newly reported here, bringing the known total up to the present to 16. All these species are known as well from Kós, Kálimnos and Léros (Olivier, 1996, 1997; Olivier & De Prins, 1996), while only one, i.e. *Gegenes pumilio pumilio* (Hoffmansegg), hasn't been recorded from the Bodrum Peninsula yet (cf. Hesselbarth, van Oorschot & Wagener, 1995). Interestingly, one species, *P. loewii loewii*, is not found further north than Pátmos in the Aegean, as far as known. *Lycaena thersamon* (Esper) neither is known to occur on the islands north of Pátmos, though it has been found further north along the Turkish coast at Efes (Prov. Izmir). All remaining species are known from Sámos as well. There is thus but little evidence in favour of any source area rather than another for the present-day butterfly fauna of Pátmos. There is no taxonomic differentiation at all of the

Fig. 1.

Map showing the geographical position of Pátmos in the south-east Aegean Sea.

- | | | |
|-----------------|----------------------|---------------|
| 1. Fourni | 6. Léros | 11. Gialí |
| 2. Agathoníssi | 7. Téliendos | 12. Níssiros |
| 3. Arkí | 8. Kálimnos | 13. Astipálea |
| 4. Lipsi | 9. Psérimos | 14. Levítha |
| 5. Farmakoníssi | 10. Bodrum Peninsula | 15. Kínaros |



population of any species on Pátmos, as compared to the adjacent island and mainland populations. About 18,000 years B.P. all fore-mentioned islands were part of one single continental land mass, together with Turkey, but at about 9,000 years B.P., Pátmos formed one large island together with Fourni, equidistant from Sámos (still connected with Turkey) and from the southern chain of islands, that formed one land mass together with the Bodrum Peninsula (van Andel & Shackleton, 1982). *L. thersamon* and *P. loewii loewii* at least may have arrived from the south. There is no evidence supporting a colonisation from the west (Kiklâdes): four species that occur on Pátmos are unknown from this island group, while two of these (*Maniola telmessia* (Zell.) and *P. loewii loewii*) are not even known from mainland Greece, and a third one, *Zerynthia cerisy cerisy* (Godart) penetrates into the Balkans not further south than northern Greece.

Checklist

Nomenclature used follows Olivier (1993). Species indicated by one asterisk were observed during my April 1995 trip and were previously known from the island; species indicated by two asterisks, also observed on the same trip, are newly recorded for the butterfly fauna of Pátmos.

| | |
|----|---|
| ** | <i>Gegenes pumilio pumilio</i> (Hoffmansegg) |
| ** | <i>Carcharodus alceae alceae</i> (Esper) |
| ** | <i>Zerynthia cerisy cerisy</i> (Godart) |
| * | <i>Iphiclides podalirius podalirius</i> (Linn.) |
| * | <i>Papilio machaon syriacus</i> Eller |
| ** | <i>Colias crocea</i> (Fourcroy) |
| ** | <i>Euchloe (ausonia) ausonia taurica</i> Röber |
| * | <i>Pieris brassicae brassicae</i> (Linn.) |
| * | <i>Pieris rapae rapae</i> (Linn.) |
| ** | <i>Lycaena phlaeas phlaeas</i> (Linn.) |
| ** | <i>Lycaena thersamon</i> (Esper) |
| | <i>Plebeius loewii loewii</i> (Zeller) |
| ** | <i>Polyommatus icarus</i> (Rottemburg) |
| | <i>Maniola telmessia</i> (Zeller) |
| ** | <i>Vanessa atalanta atalanta</i> (Linn.) |
| * | <i>Vanessa cardui</i> (Linnaeus) |

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Hazards of butterfly collecting – last flight to Natitingou

In 1978 I found myself a member of a rather large family planning evaluation mission to Benin in West Africa. It was a paranoid place at the time, a point which was driven home to us on the way from the airport to Cotonou, where banners exhorted “eternal vigilance” and “death to traitors”. It was driven home again, but even more strongly that night when volleys of shots brought death to that day’s crop of traitors.

Our hosts proudly proclaimed, “Your internal travel permits have already been authorised. As soon as we receive them, we can plan your field visits.” In the meantime we visited government ministries and development agencies, as one does on such missions. “*Photography is only permitted in the tourist-authorised areas of the stilt village of Ganvie. However, even here we have reports of tourists being arrested for taking photographs. We recommend you do not attempt to take pictures*”, said a sign at the US Embassy.

For reasons that I have now forgotten, it was deemed essential that part of our group went to Natitingou, in the extreme north-east of the country. Given our timing, it had to be by air. The only air transport was provided by the Benin Air Force. They had only two serviceable aircraft. Our status was sufficient to book one, though we had to share with a delegation from the *African Friendship Committee of the Association of Siberian Agricultural Cooperatives* – I kid you not!

One fine morning we assembled at the Air Force base at Cotonou Airport. Coffee was served. We were introduced to the members of the friendship

committee. The chief of the delegation spoke French of sorts, the others not. We were to drop the delegation at Parakou, and then continue to Natitingou. We then piled into the aircraft. Not just any aircraft, mind you, but an Antonov 2. It is just possible that some readers do not know the exact specifications of an Antonov 2. Well, it is a biplane (two sets of wings, one above the other), which seats 12 people. Struts and wires connect the two wings. In front of the pilots is a huge radial piston engine of the type that you find on the DC-6 or the Lockheed Constellation. Maximum airspeed 120km/h. Seating configuration paratroop fashion, with canvas seats along the fuselage. Unpressurised. Noise level impossible. Mitigating circumstances – possibly the toughest thing with wings ever built.

Off we took, our delegation facing the friendship delegation across the aisle. The pilots were two Russians, impossibly young and impossibly pink of complexion. An hour out from Cotonou, we met a solid bank of white cloud, solid from ground-level to 18,000 feet or more, well above the oxygen limit.

The pilot took us for a look at the wall edge of cloud, wing-tips almost touching its solid edge. He went down from 7,000 to 3,000 feet to have a look. There was hardly a ripple of turbulence. Back at 7,000 feet he motioned to us that we would go in and have a look. The moment we entered the murk, all hell broke loose. The little plane moved vertically from 7,000 feet to 3,000, back up to 15,000 where oxygen began to get scarce. My next-seat neighbour, a very ample Beninoise was draped against me as much as the seat-belt would allow – she had never flown before. After a few minutes, the pilot had us back in the open. Total tranquillity was restored.

We tried flying under the front, low enough to see the individual plants in the sisal plantations below. Suddenly an unseen hand slapped us down to the point where we could see the individual leaves of the sisal plants – make that 300 feet above ground. Discretion became the better part of valour, and pretty soon we were back on the tarmac at Cotonou. And pretty shaken at that!

We were taken to the officers' mess to recover, a rambling room equipped with the seats of the many and varied aircraft of the Benin Air Force that had since gone unserviceable. Smart batmen in white mess-jackets served drinks (political correctness demands that I call them batpersons, but they *were* all male). Cognac, vodka and beer were on offer. The head of the friendship delegation selected the largest of the glasses. The batman was about to pour a beer, "Njet", came the response, "vodka!" Not one finger, not two fingers, but full five fingers. After the calming of nerves came the toasts – to our mission, to their mission, to West Africa, to the Benin Air Force, and to *druzhba* and *mir* (friendship and peace). We had all survived!

We did reach Natitingou the following day after a five hour flight. The friendship delegation had opted for *terra firma*. We had a rather pleasant, though not terribly exciting, time. While conducting a somewhat slow interview with the Comrade *Sous-Prefet* (an African Catholic Marxist in the 1970s was not promising material for family planning discussions), I noticed an increasing migration of butterflies outside the office and left the interview to my colleagues.

The next two days at least two million butterflies of eight species flew through Natitingou in a north-easterly direction. The bulk were African Emigrants *Catopsilia florella* Fabricius, but one in ten was an African Queen *Danaus chrysippus* Linnaeus which I had never seen migrating before. I am certain that this type of migration is responsible for the sudden appearance of the West African form of *D. chrysippus* in Tunisia and Malta. I have a sneaking suspicion that my small paper on this migration is the only remaining trace of our expedition (see 1978, *Atalanta* 9: 191-198 for details)!—TORBEN B. LARSEN, 358 Coldharbour Lane, London SW9 8PL.

***Plea leachi* Mc Gregor & Kirkaldy (Hemiptera, Heteroptera: Pleidae) in Scotland.**

The distribution of *Plea leachi* McGregor & Kirkaldy (syn. *P. atomaria* (Pallas) and *P. minutissima* Leach) is summarised in Southwood & Leston (1959, *Land and water Bugs of the British Isles*. Warne) as “throughout England and probably just into southern Scotland”. In June 1960, this probability was confirmed by finding *Plea leachi* in a pond at the west end of Torrs Warren, at OS grid ref NX119536, VC74 (voucher specimens in the National Museums of Scotland, Chambers Street, Edinburgh). In the years immediately following 1960, this pond was used for dumping waste material and it was not until 1994 that the author tried to refind the bug in other ponds at Torrs Warren, without success (Huxley, 1997, *The Distribution of Aquatic Bugs (Hemiptera-Heteroptera) in Scotland. Scottish Natural Heritage Review* No. 81).

On 17 August 1997, *Plea leachi* was discovered about 35 kilometres away in an approximately one hectare fly-fishing loch near Newton Stewart, at grid ref NX442674 (VC 73, Kirkcudbright). The loch is called Lower Glenamour on the fishing club notice board and Old Mill Dam on the 1:25000 Ordnance Survey *Pathfinder* map 540. On searching the pond net with a hand lens for small molluscs, a juvenile *Plea leachi* was seen, of about 1mm in length and, after about 20 minutes further search, an adult and a larger juvenile. Because the pond has a thickly vegetated margin and dense growth of *Elodea canadensis* over the bottom, the search for further specimens was assisted by washing out fine material into a shallow dish and it was in this that the second juvenile and adult specimen were seen.

From these three specimens (now in the author's collection but ultimately destined to join the earlier collected Scottish specimens in the National Museums of Scotland) it is clear that there is a definite breeding population of this bug in Scotland, in a water body that has existed for well over half a century (according to nearby recollection) and possibly much longer from its name of Old Mill Dam. There are other lochs nearby, including the larger Glenamour Loch, which should be visited in an earlier or later month, August generally being poor for recording adult water bugs, so as to discover whether these also hold *Plea leachi*.—THOMAS HUXLEY, The Old Manse, Pitcairngreen, Perth PH1 3LR.

SOME UNCOMMON BEETLES FROM HEADLEY WARREN, SURREY

JOHN OWEN

8 Kingsdown Road, Epsom, Surrey KT17 3PU.

HEADLEY WARREN is a private chalkland Nature Reserve at the north-east end of the chalk ridge which extends from Mickleham to Headley. It occupies a south-west facing slope, above the dry valley running from Juniper Hall to Headley Heath. Apart from the remnants of largely unsuccessful conifer plantations in a few positions, the site is basically a piece of unimproved chalk downland with the rich chalkland flora characteristic of the North Downs. In terms of flora and fauna, the area can be regarded as part of Mickleham Downs. It has long been a site of entomological interest, containing the area known to 19th century entomologists as "Hilly Field, Mickleham" (Macworth-Praed, *pers. comm.*). This is where Power in 1862 took the first British specimen of *Borboropora kraatzi* Fuss (Linnell, 1899), a species not again found in Britain until over a hundred years later.

During the periods April to October 1994 and 1995, two flight interception traps were operated on the site, positioned approximately 150 metres apart, trap A at OS grid reference TQ 191542 and trap B (set only in 1995) at TQ 189541, respectively. The traps were set up and operated as previously described (Owen, 1993a). They were orientated to be essentially at right angles to the prevailing wind which blows up the partially wooded valley from the south-west.

A total of over 4000 beetles were caught, comprising 367 species. The majority of the species were typical chalkland species presumably part of the fauna of the Warren but some were dead-wood species which may have flown or been blown from some distance. Most were relatively common species but a few are worthy of the special mention below because they appear not to have been recorded from Surrey, at least for many years, because they are rated nationally noteworthy (Hyman & Parsons, 1992 & 1994) or because they are relative newcomers to the British Isles. Two local lists of beetles have been used to help put records into perspective. The first is the list of 499 beetle species recorded (Owen, 1993a) during the operation of a flight interception trap in Oyster Wood, Headley, a wooded site approximately 1000 m to the north-east of the nearest trap site on Headley Warren. The second is a manuscript list of the beetles of the Box Hill-Mickleham Downs area, compiled from published and unpublished records and containing 1350 species (Owen, 1996 *unpub.*).

This paper deals with 20 of the species caught. A complete list of the species taken will be sent on request to the author.

Notes on selected species

The letters A and B in parenthesis after the species name in these notes indicate the trap in which the specimens were caught. The numbers indicate the number of specimens caught.

HISTERIDAE

Acritus homoeopathicus Wollaston : 1994 May (A, 5); 1995 May (A, 2), July (B, 2).

This species was not noted in Britain until 1938 though it is generally regarded as a native species. It has most commonly been recorded from old bonfire sites which is the habitat in which I first met with it in the Mickleham area in 1991 (Owen, 1994). It seems to fly readily for it was among the species recorded from the flight-interception trap at Oyster Wood and was present in 1993 and in 1994 in a partially burnt, grass compost heap on Epsom Downs (Owen, Allen, Booth and Luff, 1997).

LEIODIDAE

Colon zebei Kraatz : 1994 August (A, 1)

Fowler (1888) recorded this species from various Surrey localities including Mickleham (Champion) but I am unaware of any recent Surrey records. Hyman & Parsons (1994) list post-1969 records for only two vice-counties – East Suffolk and Cambridgeshire.

SCYDMAENIDAE

Euconnus duboisi Méquignon : 1994 June (A, 1); August (A, 1)

This species was first recorded in Britain by Last (1945) on the basis of two specimens found respectively at Banstead and Capel in Surrey. Concluding that it was an undescribed species, Last gave it the name *E. murielae* but by the time of publication of the latest British Check List (Pope, 1977) it had been shown that *murielae* was a synonym of *duboisi* described from specimens taken by M. Dubois at Versailles (Méquignon, 1929). The species has subsequently been recorded from a number of sites in the southern half of England, often in synanthropic situations suggesting that it is an introduced species.

STAPHYLINIDAE

Dropephylla devillei Bernhauer (= *grandiloqua* (Luze)): 1994 October (A, 2)

Formerly, this species was considered confined to Scotland (Tottenham, 1954) but it has extended its range southwards in the second half of this century like a number of other species previously known only from Scotland (Welch & Hammond, 1996). I am unaware of any other Surrey records.

Hypopycna rufula (Erichson) : 1994 October (A, 1)

In Britain, this beetle is known only from West Kent, Surrey, East Sussex, South Devon and Worcestershire (Owen, 1993b). The species appears well established in the Mickleham area for I took two examples on 26.x.85 under

the bark of a fallen beech tree on Mickleham Downs about 400 m to the west of the trap site and a specimen turned up in the flight – interception trap in Oyster Wood in October 1993.

***Anotylus hamatus* (Fairmaire & Laboulbène) :** 1995 May (B, 3 males)

This species has mainly been recorded from chalk grassland. I have taken it from grass tufts on a south-facing chalk slope at Box Hill and by sieving dead leaves among grass on chalk near Epsom.

***A. saulcyi* (Pandellé) :** 1995 May (A, 2 males)

Most records for this beetle have been from mole's nests but it has also been found in the nests of other mammals such as badgers (Lott, 1995). There was a heavy rabbit population at Headley Warren at the time the traps were operating and the beetles probably bred in rabbit nests.

***Oxytelus migrator* Fauvel :** 1995 April (B, 1)

This originally oriental species was first noted in Europe, in Finland in 1975 since when it has spread westwards in Europe (Lohse & Lucht, 1989). It was recorded in Battersea Park, London in 1988 (Hammond, *pers. com.*) and in Clarke Gardens, Liverpool in the same year (Eccles, *in litt.*).

***Dacrila pruinosa* (Kraatz) :** 1995 April (A, 1)

There are very few records for this species in Britain. It was introduced to the British list by Champion (1897) on the basis of a few specimens taken by Elliman at Chesham, Bucks. Subsequently, Champion (1898) took specimens on chalk downland at Guildford, Surrey “..running on the bare chalk in the sunshine after a shower....”. These are the only two published records of which I am aware. My friend, Mr Allen tells me, however, that there are specimens from Box Hill, Surrey and Otford, Kent in Harwood's collection, taken about 1920. More recently, on 29.v.82 my friend Mr Johnson took a specimen in a chalk pit at Little Blakenham, Suffolk in similar circumstances to those taken by Champion (1898).

***Ceritaxa pervagata* Benick (= *dilaticornis* Kraatz) :** 1994 June (A, 1), 1995 July (A, 1)

This is the species known in Britain until recently as *C. dilaticornis* Kraatz (Hammond *pers. com.*). It was recorded from Mickleham by Champion and Power (Fowler, 1888) and it occurred in the trap in Oyster Wood but I am unaware of an other published records for Surrey.

***Alevonota aurantiaca* Fauvel :** 1994 April (A, 2)

This is a species primarily of chalk downland. Most records refers to specimens taken singly by sweeping in the late afternoon or evening, in spring or early summer. To account for this behaviour, it has been postulated that the species is basically a subterranean species. Direct evidence for this lifestyle was obtained by the capture of a specimen in an underground pitfall trap set in a garden on the edge of the chalk at Ashted, Surrey in June 1996 (Owen, 1997). This is a rare species recorded only from Dorset, Hampshire

and Surrey. Allen (1991) has reviewed records up to that time. I can add the record of a specimen found under a stone at Arundel, West Sussex on 14.v.79.

***A. gracilent*a (Erichson) : 1994 April (A, 1)**

Like the preceding, this is probably a subterranean species, appearing above the surface for a limited period in spring and early summer. There are old records for Surrey but none that I can find for the period after 1969.

***Aleochara discipennis* Mulsant & Rey : 1994 April (A, 2), June (A, 2), July (A, 1); 1995 April (B, 1), May (A, 1), June (A, 4), July (B, 9)**

The ecology of this species remains to be determined. Other members of the genus are known to be predatory (as larvae) on early stages of diptera species. Adults have been found in various types of herbivore dung and in carrion. My first specimen was shaken out of a dead rook in Windsor Great Park, Berkshire. As far as Headley Warren goes, there were horses and sheep grazing in fields within a short distance of the trap sites. A number of specimens were trapped in Oyster Wood. There appear to be no other recent Surrey records.

***A. verna* Say : 1995 May (B, 2), July (A, 2)**

Because of doubts about their identity, *Aleochara* specimens which I had taken at various sites including Headley Warren and which matched some tentatively identified as *A. pauxilla* (Owen, 1990), were recently submitted on request to Dr Ch. Maus, Freiberg and to Dr R.C.Welch who both returned them as *A. verna*. The opportunity is taken here of recording *A. verna* formally as a Surrey insect.

BUPRESTIDAE

***Trachys scrobiculatus* Kiesenwetter : 1994 April (A, 1), June (A, 1), August (A, 2); 1995 May (A, 2; B, 8), June (A, 1; B, 1), July (A, 4; B, 2)**

This is a species of open chalk downland of the North and South Downs where it is associated with ground ivy. I have found it frequently by sieving moss on various parts of Box Hill.

EUCNEMIDAE

***Hylis olexai* (Palm) : 1995 July (A, 1)**

This eucnemid appears to be well established in the Mickleham area. Interestingly, the first British specimen was taken at Box Hill in 1951 though the captor – a visiting Finnish entomologist, did not realise that the beetle was not then on the British list (Allen, 1954). I found a dead specimen in a fallen beech tree at the base of Mickleham Downs on 8.ix.90. On 23.vi.93, my friend, Dr Booth, found a number running over a spruce stump in the same area and very kindly gave me one. A recent publication (Mendel, 1996) shows that this beetle is known in Britain only from Hampshire, Sussex, Kent and Surrey.

DERODONTIDAE

***Laricobius erichsoni* Rosen** : 1995 April (A, 1)

This species was recorded new to Britain on the basis of a specimen taken at Boyton, Suffolk in 1971 (Hammond & Barham, 1982). It was deliberately released in Kent in 1972 as a biological control agent against a conifer aphid but this was after it had been found at Boyton which is reason to consider its appearance in Suffolk the consequence of natural spread to Britain. It was recorded from central Scotland in 1982 (Lyszkowski, 1987), southern Scotland in 1987 (Sinclair, 1989) and from Speyside in 1995 (Booth, *pers. comm*; Hodge, *pers. comm.*). This appears to be the first record from Surrey. Its apparent absence so far from other southern counties or from the Midlands suggests, perhaps, that its appearance in Scotland is a result of direct immigration from Scandinavia rather than spread from Suffolk.

ANTHRIBIDAE

***Choragus sheppardi* Kirby** : 1994 June (A, 1)

This is a species of woodlands and old hedgerows where its larvae develop in dead ivy branches. There are many ivy-covered trees in the valley leading up, to Headley and the specimens may have come from these. The species has been recorded from many counties in the past, including Surrey. Recently, however, it has become much less common and I have been unable to find any recent Surrey records.

CURCULIONIDAE

***Smicronyx reichi* (Gyllenhal)** : 1995 May (B, 1), September (B, 1), October (B, 10)

Another species of chalk downland, associated with common centaury and, possibly, also yellow-wort. I beat a specimen from a crab-apple tree at Box Hill on 26.v.86 and shook another out of moss on White Down, Surrey on 3.xi.93. Recorded from various southern counties in the past but only from East Sussex and Surrey in recent years (Hyman & Parsons, 1992).

***Trichosirocalus* (= *Ceuthorhynchidius*) *horridus* (Panzer)** : 1994 April (A, 1)

This beetle is associated with various thistle species. There are old published records for Surrey but I am unaware of any recent, published records. Dr R.G.Booth, however, took a specimen on Mickleham Downs in April 1992 and another in June 1993.

Acknowledgements

I am much indebted to the late Mr H. Macworth-Praed for permission to visit Headley Warren, for information about the site and for help in setting up the flight-interception traps. I thank Mr A.A. Allen, Mr P.M. Hammond, Dr Ch. Maus, Mr H. Mendel and Dr R.C.Welch for checking critical species and Dr

R.G. Booth, Mr T. Eccles, Mr P. Hodge and Mr C. Johnson for information on their own relevant captures. Lastly, I must thank my wife for her unfailing help in constructing the traps, setting them up and retrieving the catch.

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The wasp-nest beetle *Metoecus paradoxus* L. (Col.: Rhipiphoridae) in north-east Hampshire

A deceased male specimen of this curious insect was found in a mv moth trap located in my garden at Farnborough, Hampshire (OS grid reference SU 858755) on 30 July this year (1997). It was the second occurrence of this species in the trap, the first one, also a male, was noted on 9 July 1995.

Both specimens arrived on warm, humid nights during periods when many wasps *Vespa vulgaris* L. were active. Twelve wasps were recorded in the trap on 30 July 1997 and three on 9 July 1995 (increasing that summer to fifty a night by 1st August).— R.W. PARFITT, 29 Manor Road, Farnborough, Hampshire GU14 7EX.

BOOK REVIEWS

Scythrididae by Bengt Å. Bengtsson in P. Huemer, O. Karsholt and L. Lyneborg (Eds.) *Microlepidoptera of Europe, Volume 2*. 301 pages, 14 colour plates, 419 text figures. 248 x 175 mm, hardbound. ISBN 87 88757 11 0. Apollo Books, Kirkeby Sand 19, DK-5771 Stenstrup, Denmark, 1997. 500 Danish Kroner plus postage (review copy weighs just over 1 Kg without packaging).

This is the second volume in the series *Microlepidoptera of Europe*; the first volume, covering the Pterophoridae, was reviewed during 1996 by Paul Sokoloff in *Ent. Rec.* **108**: 172-174.

The Scythrididae have a world-wide distribution and are even encountered on isolated islands, where they often show special features which differ from the rest of the family. However, with only about a dozen species known from the British Isles one may wonder how this book can be of use to British lepidopterists, given that our species will in any event shortly be covered in volume 4 of *The moths and butterflies of Great Britain and Ireland* from Harley Books. In my own view the answer to this is quite simply that because the family contains so many species which are quite difficult to identify and because a large proportion of them have some association with

ruderal habitats, there is great potential for additional species to be discovered here. Finding them is likely to prove impossible without this excellent new book from Apollo.

The introductory sections are short but useful. Clear details of the important scythridid morphological features, identification hints, instructions for making genitalia preparations (how nice to see that it is not taken for granted that everyone already knows how to do this), bionomics, hints on collecting and geographical distribution are all covered. The bulk of the book is taken up with the individual species accounts which follow the formula of synonymy, identification (diagnosis), male genitalia, female genitalia, distribution, biology and additional remarks. Fourteen pages of superbly printed colour plates of beautifully executed paintings follow and then 70 pages of genitalia drawings - first 49 pages of males then 21 of females. A tabular presentation of the distribution of Scythrididae species in Europe and North Africa ensues and the work ends with references and an index.

As a work for the identification of the members of this family this book appears to be excellent, though I confess to having rather too few specimens in my collection to test it properly. Where it perhaps falls down most is in the scant detail provided on biology of each species, though perhaps in many cases this is because the information is simply unknown. Hopefully the book will stimulate further research towards resolving this problem.

It is a little disconcerting to discover that the two recent works produced from Apollo Books, both of which have received editorial input from Ole Karsholt and, having been published only a year apart from each other, can reasonably be assumed to have overlapped in production, have different opinions on the definition of the European scythridid fauna. Karsholt & Razowski (1996) listed 152 European species in the family; the present volume under review names 237. Forty of these are new species, here described for the first time but that still leaves 45 left over. At least some of this discrepancy seems to be explainable through the discovery that "Europe" in the sense of Dr Bengtsson includes northern Africa (for example, the inclusion of *Eretmocera microbarbara* Walsingham (known from Algeria and Egypt) and *E. nomadica* Walsingham (known only from a single Algerian specimen in the BM(NH)). I note that Iranian species are also included and wonder just what the definition of Bengtsson's Europe truly is. I personally consider that the inclusion of these additional areas is a good idea, since some species from them may well find their way into Europe proper, but I am amazed that the two volumes give these different definitions of the same named geographical area.

Of course, some of the discrepancy can also be accounted for by taxonomic revision, but the order of presentation of the species differs between the two works and quite frankly, not having a specific interest in this family, I could not be bothered to work through the two lists to cross-reference everything. The author states (on page 14) that " ... Instead of

trying to utilise a systematic sequence in the present work, I have dealt with the species in alphabetic order. As a result, regrettably, some obviously quite closely allied species are parted.” Unfortunately, reference to the checklist on pages 17 - 24, in which the species are listed (and numbered) in the order of their later presentation, shows that this is simply not the case. The generic sequence given is *Scythris*, *Erigethes*, *Parascythris*, *Eretmocera*, *Necrothalassia*, *Episcythris*, *Enolmis* and then *Apostibes*; within the last seven genera the species are indeed arranged alphabetically, but in the largest genus, *Scythris*, the 204 species are most certainly not so presented.

These criticisms are, however, relatively minor and certainly do not detract from either the enjoyment or the immense value of this long-needed volume. It goes on my list of recommended books for Christmas for anyone seriously interested in the microlepidoptera.

Reference

Karsholt, O. & Razowski, J., 1996. *The Lepidoptera of Europe: A distributional checklist*. Apollo Books.

Colin W. Plant

Atlas of grasshoppers, crickets and allied insects in Britain and Ireland by E.C.M. Haes and P.T. Harding. 62pp. A4, softback. ISBN 0 11 702117 2. Published by the Institute of Terrestrial Ecology and the Joint Nature Conservation Committee, July 1997. £15.50. Also available direct from Stationery Office Publications, PO Box 276, London SW8 5DT at £15.50 plus £2.50 p&p.

This glossy-covered tome joins mammals, reptiles & amphibians and dragonflies as the fourth in the series of “final” distribution atlases of British Isles insects to arise from the Biological Records Centre at Monks Wood.

Minimal introductory text leads us straight into the distribution maps and associated species accounts which are the main purpose of the work. The maps place on record the distribution of each species on the basis of ten-kilometre squares in the two date bands pre-1970 and 1970 onwards; for a few selected species, introductions or “records of colonisation since 1990” are also indicated. The species accounts are good but scarcely original, with much of the text taken from existing publications. However, since the work is intended as a companion volume to Marshall & Haes (1988) this is scarcely important and those who do not have this latter work will surely be satisfied with the quite adequate text in this new work.

Reviewing maps is interesting, but always difficult. The maps represent factual data – a report on what was actually found without interpretation – and as such can not be directly criticised. But, since this is a “final” set of distribution maps one should examine carefully the degree of coverage achieved to help assess if these maps reflect accurately the true distributions of the species concerned. Of course, nobody would truly expect the authors

to have recorded every species available in every ten-kilometre square; that would be an impossible task. However, if coverage is adequate then the overall patterns of distribution will represent the true situation and there will be no subsequent surprises when new areas are visited. For example, *Tetrix ceperoi* (Bolivar) is shown as clearly a coastal species, extending from about Pembrokeshire around the south coast to the Thames estuary with an isolated record in the fenland area of East Anglia. Do the maps convince me that sufficient work has been done on the remainder of Britain's coastline, or indeed inland, to enable me to be certain that this is a true distribution pattern and not the product of the fact that there are more entomologists in the south of England than elsewhere in the country? I think that the answer is yes, but I would draw attention to the map of the distribution of all species on page 9 in which there are, perhaps inevitably, large areas of Ireland and Scotland from where there no records at all. Another map, on page 6, purports to be a coverage map expressing findings in terms of the number of species per ten-kilometre square. I suggest that this may not be a coverage map at all, but a map of species density. The lowest value on the map for species per ten-kilometre square is one; surely a coverage map should show the squares covered – including those where zero species were found after proper searching. This vital information is not given and the reader is left not knowing if these squares have no orthopteroids in them (which is quite possible) or if they were simply not visited (in which case an important colony of a mountain form of *Tetrix ceperoi* could perhaps have been missed!).

A number of minor, but nevertheless annoying, production errors are evident and tend to spoil what is overall an excellent and valuable piece of work. A number of the map captions, for example on page 15, have the text overlapping beyond the frame in which they are printed – sloppy editorial input. A *Corrigenda* slip included with the published book (but not included with the advance copies for review) apparently lists a number of other annoying errors that appeared after the final page proofs had been corrected and returned by the authors. Unfortunately this apparently does not mention the transposition of map captions between pages 15 and 16 – the keys to map symbols for *Metrioptera brachyptera* (L.) and *M. roeselii* (Hagenbach) should be swapped around.

Overall this is an excellent publication and one which will prove of interest to entomologists of all persuasions and a positive asset to people who, like the reviewer, are involved professionally in the assessment of invertebrate interest of discrete sites.

Reference

Marshall, J.A. & Haes, E.C.M., 1988. *Grasshoppers, crickets and allied insects of Great Britain and Ireland*. Harley Books, Colchester.

Netzflügler, Schlamm- und Kamelhalsfliegen: Beobachtung, Lebensweise by Ekkehard Wachmann and Christoph Saure. 160 pages, numerous colour plates. 187 x 115 mm, hardbound. ISBN 3 89440 222 9. Weltbild Verlag GmbH, Steinerne Furt 68 - 72, 86167 Augsburg, Germany, 1997. 36DM plus postage.

For those, like the reviewer, whose sole language is English (and not always particularly accurate English at that!) this is a book entitled *Lacewings, alder- and snake-flies: observations, life-histories*. So what, I hear the reader ask, is point of reviewing a German language book in a journal whose readership, by and large, most probably can not read that language?

At present there is a rather glaring *lacuna* in the British literature concerning these insect groups. The Royal Entomological Society's 1959 key, by Lt.-Col. Fraser, in their series *Handbooks for the identification of British insects* is not only long out of print but is also rich in errors and does not include a number of species which have been added to the British fauna since publication. For the serious student of lacewings, the only work available for the identification of British species is, at present, the magnificent two-volume work *Die Neuropteren Europas* by H. & A. Aspöck (1980), but this is also in German and costs about £250. Thus, whilst we await production of the AIDGAP key to lacewings and allies from the Field Studies Council, there is effectively no key to British species.

This new book by Wachmann & Saure, which is perhaps something akin to our own *Observers Books*, may be of some help in plugging this gap. A lengthy and comprehensive introduction to the three groups of insects is followed by keys to identify specimens to family for both adults and larvae. The remainder of the book comprises a short but comprehensive text on a number of representative species. If one reads German then this book will be invaluable. Its main value, however, lies in the large number of excellent colour photographs of both adults and larvae. These are some of the finest that the reviewer has seen and, though pictures are no substitute for keys, they are likely to be of considerable help at least to those lacking experience in the groups covered.

Two small errors have been notified to me by Christoph Saure: on page 57 drawing Z-16 has been reduced too much whilst the accompanying captions have not, with the result that the caption arrows point to the wrong features and on pages 84 and 88 the pictures of *Hemerobius atrifrons* and *Wesmaelius concinnus* have been accidentally transposed. Apart from these two, the book seems remarkably error-free; it would make an excellent Christmas stocking-filler for anyone with an interest in the Neuroptera, Megaloptera and Raphidioptera.

Colin W. Plant

From the Editor's chair ...

With this page we reach the end of volume 109. I have tried to present a balance of papers and notes on a range of entomological topics whilst still endeavouring to maintain an emphasis on the British Lepidoptera. I think that I have succeeded at least moderately well, but I am always keen to listen to constructive criticism. I can, of course, only publish what I receive.

Unfortunately, rising costs have given us some problems. Efforts to subsidise production with money from advertising and sponsorship have met with only limited success. I would like to take this opportunity to thank the British Entomological and Natural History Society for a very generous grant towards the production of this issue of the journal but this alone is not adequate to stave off a subscription increase. We have held the price at an artificially low level for several years now and, in the absence of sponsorship, bequest or a simple, old-fashioned donation or two, have finally reached the stage where an increase to a more realistic level is not only inevitable but is also essential to our survival. We note with great concern the fact that the *Entomologist* has now ceased publication for purely financial reasons (*antea*: 261). With considerable regret, therefore, I have to announce that the annual subscription for private subscribers to the 1998 *Entomologist's Record* will rise to £28.

It ought to be higher, but we aim to save costs in other areas. A number of options were considered and we have come up with the following package which we hope will meet with approval. We will continue to produce six issues per year, but these will each involve only 48 pages (unless we find extra money from other sources), so keeping us in a lower postage bracket as well as saving on printing costs. To compensate for this loss of space, we will be increasing the width of the printed area of the page so that, although you will only get 288 pages per volume, the content will be equivalent to 312 pages of the 1997 format. In other words, there will be no real reduction in the average amount of words published per year. This means I will be able to continue to offer authors publication of their papers within a year and of their notes within three months. This is probably the fastest rate in British entomological publishing and can only make us more attractive to potential authors. Authors should also note that we save £3 per page for material submitted on floppy disk or by e-mail (equivalent to 30 subscriptions at the new rate if the whole volume is prepared this way).

I hope, then, that you will not feel that the rather large jump from £22 to £28 is too much, and that you will continue to support us by remaining as a subscriber. The 1998 renewal form is included with this issue and I hope that you will fill it in and return it to the Treasurer as soon as possible.

Colin W. Plant

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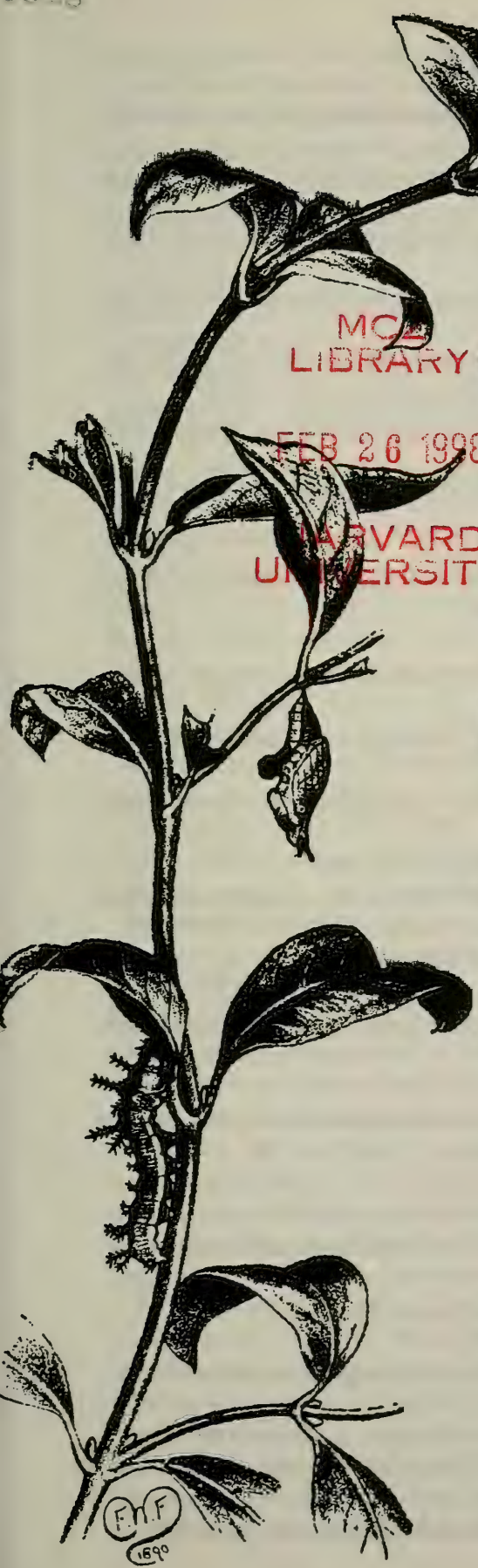
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CORRIGENDA

- Page 88, line 20: insert “the” before “fallacy”.
- Page 97, line 13 up: for 1966 read 1996.

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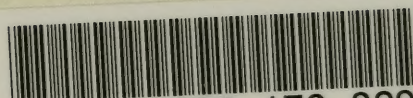
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